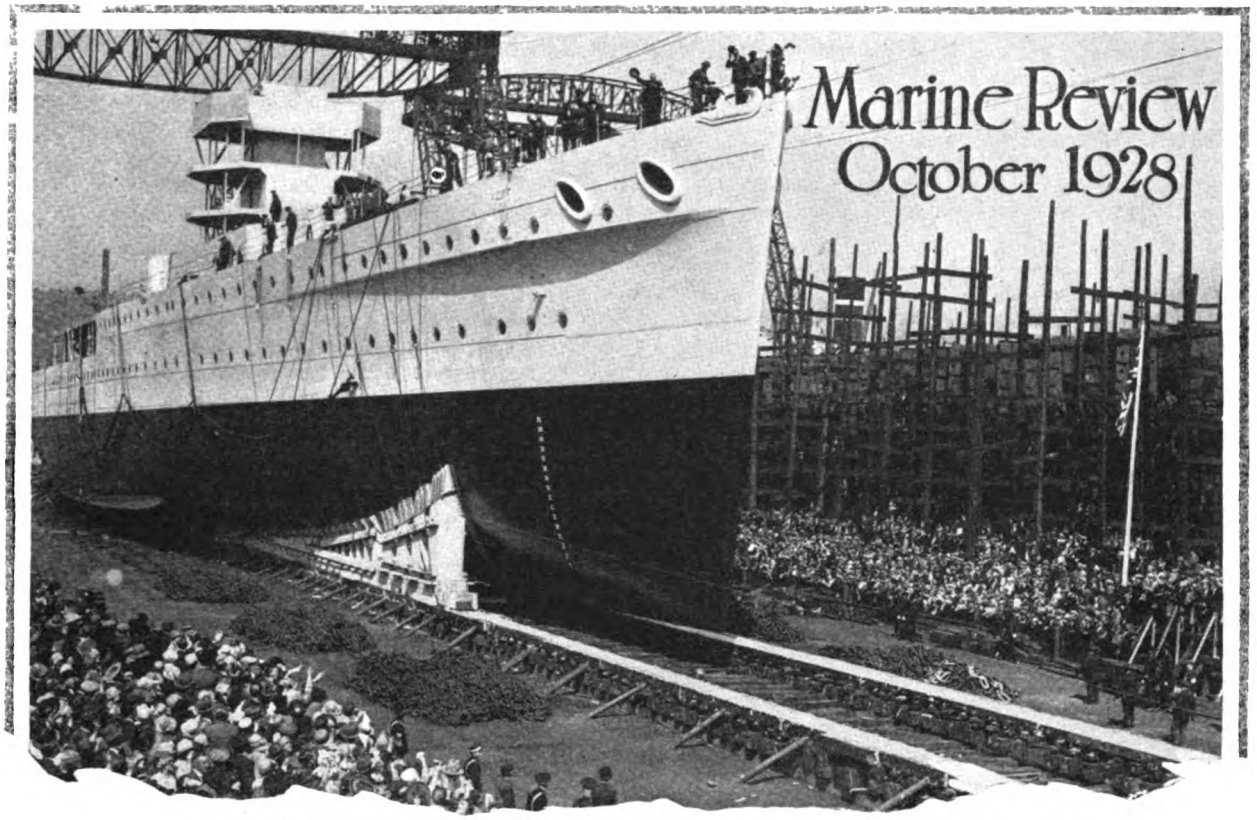

H. M. S. York, New Type British Cruiser Launched at Palmer's Yard, Jarrow-on-Tyne, July 17, 1928

How Steamship Budgeting Systems Help to Increase Net Earnings

BUDGETING in steamship accounting serves as a check on careless expenditures and is a real source of a clearer, more accurate and a much closer knowledge of actual operating cost. No private steamship company should adopt any system by which there is any chance of limiting initiative and essential action due to red tape. But this cannot happen with a practical budgeting system which serves both to keep accurate tab on what revenue is to be expected and how much money is to be spent while at the same time actually encouraging initiative by the study which becomes necessary for the results obtained when using such a system. An analysis of the budget figures for each item of expenditure and revenue may readily lead to a modification of procedure by which expenses can be reduced and revenues increased. In other words such a system will lead to a closer scrutiny of all expenditures, because the operating manager and his assistants are compelled to give definite thought to the probable cost and returns for any voyage of a ship or over a period of time for the entire fleet, in order to make up the figures on which the accounting department under the president or general manager can make up proper budgets.

Realizing the importance of a practical system which will give the managers of a shipping enterprise immediate and definite control over all expenditures, the policy holders' service bureau of the Metropolitan Life Insurance Co. made a study of this subject and issued a report on budgeting in steamship companies. This report was based on the systems of budgeting used by two well organized American steamship companies. The following is taken from the complete report made.

Methods of operation and management used by steamship companies whereby passenger traffic and freight loading are known in advance for each voyage make the use of a budget system in steamship companies a good deal simpler than in many other lines of business. Unlike the average manufacturing or commercial organizations, steamship companies are able to estimate, with a high degree of accuracy, in advance the probable revenue and consequently the probable expense of a given unit of operation, such as the complete

voyage of the steamer. To bring this out the budget system in operation by two internationally known American steamship organizations has been studied and is described.

In the case of the first steamship company the system in use was adopted in 1923 and it has produced excellent results in every way. The budget estimates were found to be so nearly in accord with the actual figures that this company made a regular practice of using the budget or estimated figures in the preparation of its monthly operating statements, revising these as necessary later when the actual figures are in hand.

Revenue and Expenditure Estimated

Prior to the beginning of each voyage of each steamer the accounting department is furnished with a statement of estimated passenger revenue based upon passenger bookings already made. Similarly estimates of income to be derived from freight, mail and miscellaneous sources of revenue are made.

Concurrent with the preparation of these budgets of income, estimates of the expenses which will necessarily be involved in producing this income are made by the operating department. Thus, estimates of vessel expenses, cargo expenses, port charges, passenger expenses, freight charges, mail expenses and ballast expenses are prepared. Forms conveniently arranged are used in preparing these estimates for presentation to the accounting department. The figures for revenue and expenses are then summarized in a special form prepared for this purpose. Finally in still another form is shown the ratio which the various items of revenue and expense bear one to the other.

After completion of the voyage the actual figure for both revenue and expense items are obtained and are compared with the estimates. From an accounting standpoint the complete history of the voyage in question is then written up. This final report practically amounts to a complete profit and loss statement for each completed voyage of each vessel.

In addition to the estimates by voyages and the individual estimates mentioned above, definite estimates and forecast are made for one year in advance for each functional department, including the passenger, freight, operative and general administrative departments. These forecasts are combined by the treasurer and the statement prepared showing anticipated cash receipts and expenses for the period. In the case of the administrative budget, for example, classified statements showing the expenses of previous years are submitted to the various department heads and each one is asked to estimate what the maximum is that he can do under the conditions which are likely to prevail during the coming year. These estimates are carefully scrutinized by a budget committee in order to establish that they are reasonable. Budget figures are compared with actual results at the close of each month and estimates for the ensuing months are revised and changed to meet new conditions which may have developed subsequent to the preparation of the original estimates. Heads of departments are furnished with these statements monthly, together with comments relative to the differences between the budget figures and actual results. Where expenditures are in excess of the budget they are called upon for an explanation.

Control Through Budget Committee

The president, the assistant to the president, and treasurer, in the steamship company whose system of budgeting we are describing, comprise the budget committee. This committee controls expenditures and approves all important invoices before payment. All capital expenditures of amounts in excess of $1000 are carefully considered and the department head prepares the complete statement of the proposed expenditure. All such proposed expenditures must be approved by the budget committee before they are undertaken and in most instances the matter is passed upon by the president personally.

In addition to the direct control over expenditures outlined above, the purchasing agent of the company reports directly to the treasurer and the latter personally approves all purchase orders for office appliances, stationery, etc., before they are sent out to the vendors.

Commenting on the budget methods used by this steamship company, the treasurer of the company, A. W. Lishawa, who furnished the information on which the above description is made, said:

"Chief among the benefits which have been derived as a result of the installation of our budget system is the fact that all department heads not only became intimately acquainted with what it costs to operate their department, but, in addition, they take an active interest in holding department expenses within the budget and reducing them wherever possible. This feature alone we consider valuable enough to have justified the installation of the budget. In addition we have found it possible to show a reduction in expenses each year from those of the preceding year, having at all times a very close control over all expenditures."

Another Company's Budget

Another company whose budget methods have shown good results operates numerous steamship lines primarily as a means of transporting its agricultural products from tropical ports to markets in the north. However, the company also carries on a substantial general freight and passenger business and the operating problem becomes very much the same as that of the company exclusively engaged in passenger and freight carrying. The budget procedure for this company is carried out as follows:

In November, the treasurer's office, which represents the president in the company's budget control system, secures from the officials responsible for the operation of the marine department an estimated budget program for the ensuing year. This budget is based partly on past experience, as well as on a knowledge of the company's future program and proposed steamship itineraries. It is predicted on a more economical operation from month to month. The estimates are subdivided into various items of repairs, fuel, wages, etc., following the expense classification of the accounting system in use. There is also a less detailed estimate according to ships, and the ports out of which the regular run ships operate. In other words, budget control is modeled along the lines of the company's organization, and responsibility for estimates and expenditures is definitely placed.

Steamship revenues, which of course come from the carriage of freight, passengers, and mail, as well as expenses charged to the traffic end of the business are estimated in detail by the responsible operating officials in the same way.

At the end of each month the treasurer's department furnishes the officials with a budget report showing actual results compared with the department's estimates together with a notation as to the amount by which the actual figures exceed or are below the budget. Explanations are called for in connection with all appreciable differences.

A further control of expenditures, particularly those in connection with repairs of steamers, which is a con-

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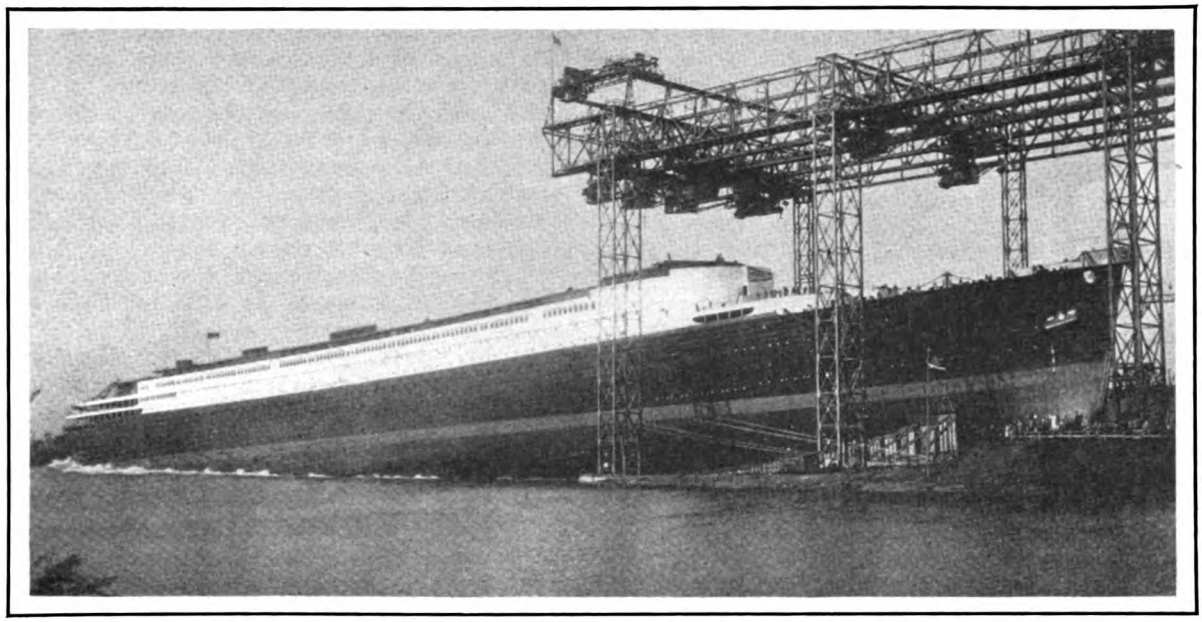


Quadruple Screw Turbine Liner Bremen Launched at Bremen, Aug. 16, 1928—Ready for Service Spring of 1929

Germany Builds Two Super Liners in Bid for Atlantic Supremacy

IN December 1926 the North German Lloyd, after a long period of planning and at the successful conclusion of an arrangement with the German government, definitely decided on the construction of two very large and fast liners for the transatlantic service. The names proposed were BREMEN and EUROPA. This famous German shipping company, with a splendid reputation for fine service before the war, was no longer satisfied to continue operations with, what at the best might be termed, second class ships. It had come to a decision and that decision was to build two vessels of great size and great speed and with interiors as rich and luxurious as the mechanical and artistic skill of German handicraft could make them.

In such a tremendous job it was inevitable that considerable time would elapse between the placing of the order and the actual beginning of work on the ways. The keel plate for the BREMEN, therefore, was not laid until June 18, 1927 at the shipyard of the Deutsche Werke: Weser, Bremen; while the keel of the EUROPA was laid July 23, 1927, in the shipyard of Blohm & Voss, Hamburg. The EUROPA was launched amid great acclaim and before many thousands of exalted onlookers on Aug. 15, the American ambassador, Dr. Jacob Schurman acting as official sponsor. The BREMEN was launched the following day, Aug. 16, in surroundings of even greater glamour and demonstrations of national ardor, with President von Hindenburg acting as sponsor. It was pointed out that the launching of two vessels of such size within the space of one day was an event unparalleled in all the records of shipbuilding.

THE information upon which this article is based, and the accompanying illustrations were obtained by Vincent Delport, European manager of MARINE REVIEW, *from the North German Lloyd. The company informed Mr. Delport that further particulars such as anticipated maximum speed, dimensions, displacement and a detailed description of the propelling machinery cannot be given out at the present time.*

It may be that the purpose of this unusual secrecy is to whet public interest in these two mammoth liners intended to restore Germany to prewar eminence in transatlantic service. As far as speed is concerned it is officially announced that the BREMEN *and* EUROPA *will make the voyage from Bremen to New York in six days and from channel ports to New York in five days; which is only slightly, if any better, than the fastest present-day liners.*

The North German Lloyd was founded Feb. 20, 1857 by Konsul H. H. Meier. In 1925 the Roland line, the Hamburg-Bremen-Africa line and the Horn Steamship Co., were combined with the North German Lloyd. At the present time the leaders of the company are: president Dr. Philip Heineken; chairman of the board of directors, J. C. Stimming; vice chairman of the board of directors, E. Glassel; members of the board, A. Stadtlander and H. Hehmsoth. On Jan. 1, 1928 the fleet of the North German Lloyd comprised 434 vessels aggregating 861,418 gross registered tons including new construction. The prewar fleet totaled 982,952 gross registered tons. So that with the BREMEN and EUROPA completed and placed in commission during the spring of 1929 the total tonnage of the fleet will be only about 12 per cent less than at its prewar peak. The com-

pany maintains regular connections with passenger and freight steamers to all parts of the world. There are some 13,000 employes altogether on land and at sea.

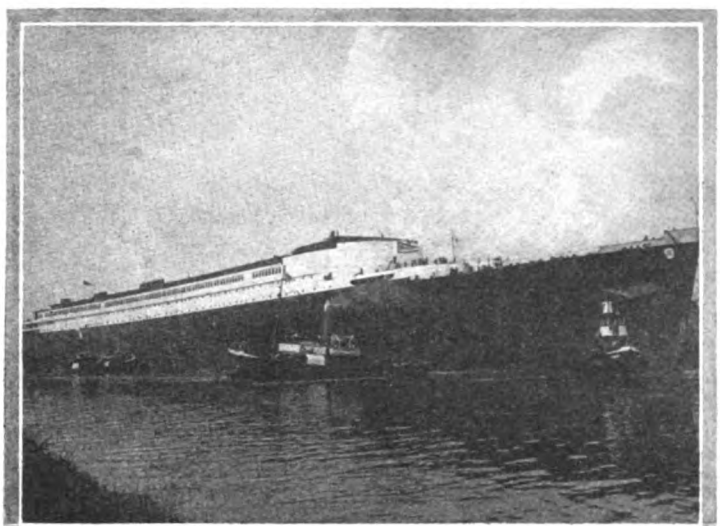
Very little authoritative detailed information is at hand concerning the dimensions, hull design particulars and machinery of the EUROPA and BREMEN. It is officially stated however, that each of these ships will be of 46,000 gross tons register and that they are the largest vessels in the German merchant marine, being about 14,000 gross tons larger than the COLUMBUS. They are to have a speed which will enable them to reach Bremen from New York in six days even, and the channel ports in five days. Propulsion will be by means of four propellers driven by four independent turbine plants each connected to the propeller shaft by single reduction gearing. Steam will be produced by watertube boilers fitted to burn oil. Forced draft on the closed stoke-hold principle is to be used. The boilers said to be of modified Yarrow type will use only distilled water for make-up feed. In line with customary practice, diesel engine-driven generators will supply electric current for lighting and for a great variety of electrically driven auxiliary machinery; also for cooking and for heating staterooms. The combined horsepower of the main turbines, it is understood, will be about 96,000 shaft horsepower.

Not World's Longest Ships

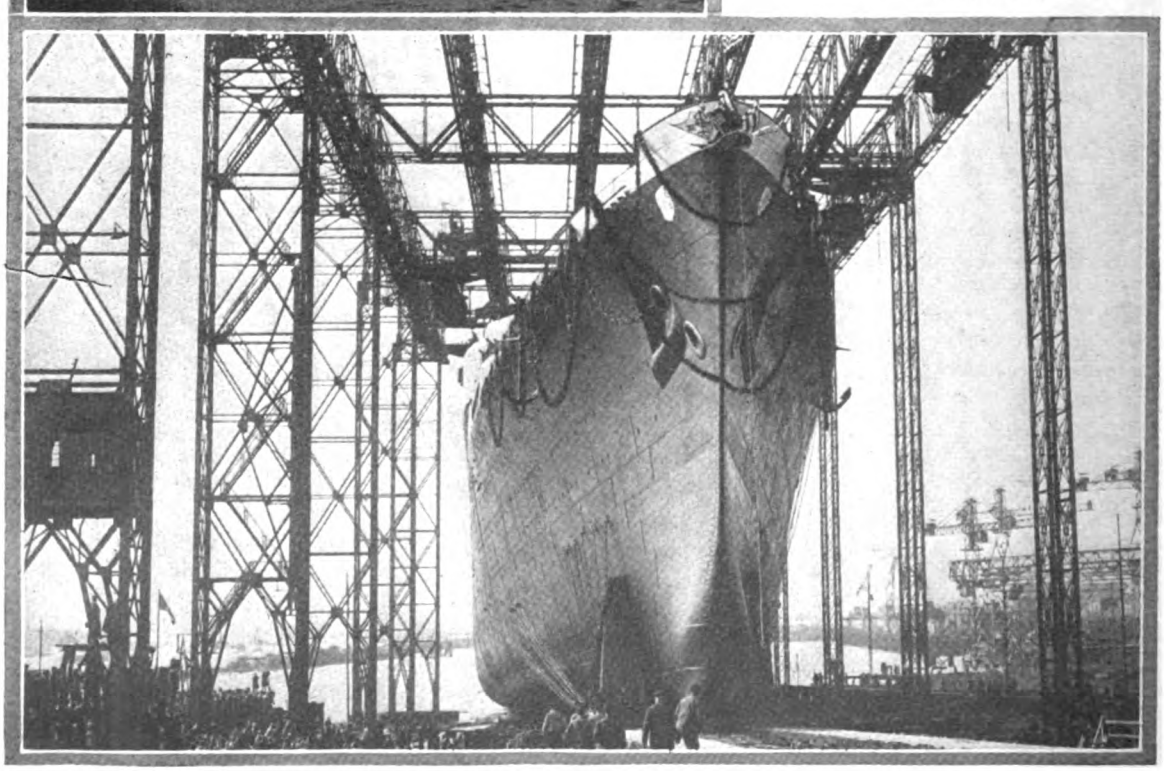
That they will not be the longest ships in the world seems quite certain. The length mentioned is 938 feet which is something like 10 feet and 16 feet respectively under the length of the LEVIATHAN and the MAJESTIC. A photograph of the EUROPA just before launching shows draft marks to 35 feet. This would seem to be approximately the normal or operating load line of the vessel. Photographs also show very clearly a rather unusual shape of forebody; that is, it is rather unusual on merchant vessels. The bow is of the bulbous type gradually diminishing as it reaches the water line, though at this point and above, the stem seems to be plated in and to be of considerably greater thickness than the customary bar type. The shape adopted for the forward body of these vessels has been familiarly known in the United States particularly in connection with navy work for many years. Admiral D. W. Taylor, while at the model basin in Washington, we believe, first discovered the greatly beneficial effects of such distribution of displacement at certain speed length ratios. At any rate it may be taken for granted that the German naval architects have exhausted all the possibilities of their excellent experimental model tank at Hamburg to determine the most efficient shape of hull.

The new liners are of quadruple screw and will each have two masts and two funnels. The stem is straight with a considerable rake and the stern is of fantail shape.

Interior decorations of the liners will be carried out by architects and artists of national reputation. Decorations such as pictures, plastics, carpets, paintings etc. are to be done by artists of the highest reputation. An innovation on the EUROPA and BREMEN



North German Lloyd liner Bremen just after launching at Bremen Aug. 16, 1928. This liner in size, speed and appointments far exceeds the finest present ships of the German merchant marine. The speed, it is said, will be greater than that of any existing merchant ship



The S. S. Bremen sliding down the ways at the Deutsche Werk at Bremen, Germany after being christened by President von Hindenburg. The launching was entirely successful and was attended by many thousands. The day was observed as a national fete day, bringing out the solidarity of public opinion for a vigorous renaissance of Germany's merchant marine

is the location of a restaurant next to the large first class dining saloon for those passengers wishing to take their meals as they please, such passengers paying only the passage fee without board.

Ventilation of all parts of the ship has been carefully studied. In the first class besides many cabins with private baths there will also be many cabins with shower baths. A large modern swimming pool will also be fitted. Adjoining the pool will be located a bar for refreshments after strenuous exercise. A number of medicinal baths will be located in proximity to the swimming pool. Passengers and crew needing medical attention will be given the best possible care in several hospitals under the supervision of highly trained doctors.

The cabins and public rooms of other classes will also be arranged and fitted out in the most practical and comfortable manner. On ships of this size there will, of course, be spacious covered and open promenade decks giving ample opportunity for recreation. There will be on board attractively arranged stores for selling books, flowers, confectionery and other things.

Nothing has been stinted in making the BREMEN and EUROPA the safest possible ships. Safety devices of the best and latest approved type will be used. The ships have double bottoms throughout and a large number of watertight bulkheads, openings in which can be immediately shut from the bridge in case of an emergency. The bulkhead system in way of the boiler and engine rooms has been planned so that in case of even a severe collision the propelling machinery will not be affected.

Measures to Insure Safety

Though the vessels themselves have been made as nearly unsinkable as possible, using all the knowledge and devices of the science of naval architecture and ship construction, special attention has been paid to life boat equipment. The life boats, built according to most modern standards, are motor driven. There is life boat capacity sufficient to hold all passengers and crew. Four of the boats are equipped with wireless. All of the boats are placed on the boat deck and can be quickly and simultaneously lowered to the water. The boats are of the nonsinkable variety. Needless to say all other safety devices, fire alarms and extinguishing systems, wireless equipment, all manner of navigating instruments, signals, radio compass are of the highest technical development.

Sports and gymnasium equipment on these two liners will provide all passengers with ample opportunity for exercise. The sun deck, particularly due to its spaciousness, is suited for all kinds of outdoor games. Gymnasiums fitted with every kind of exercising apparatus are installed in the first, second and tourists' third class accommodations. One feature, which is not quite clear, is the so-called economy rooms. For all passenger classes and the crew on these vessels the company states that large economy rooms are provided with electric cooking stoves. Electricity is

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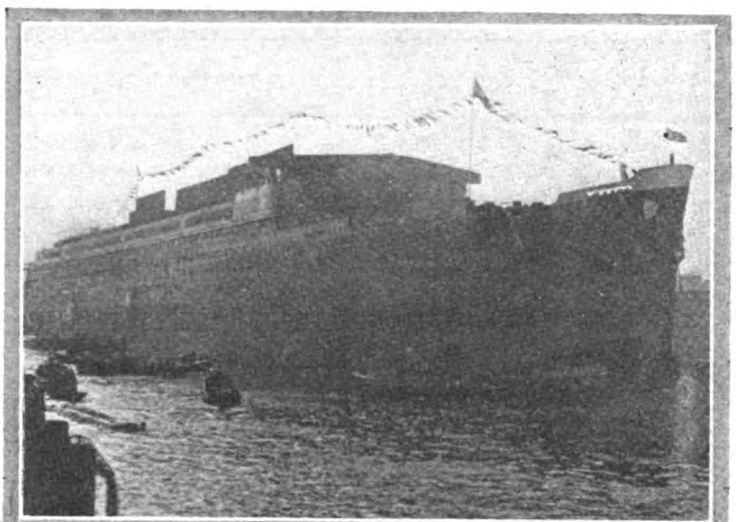
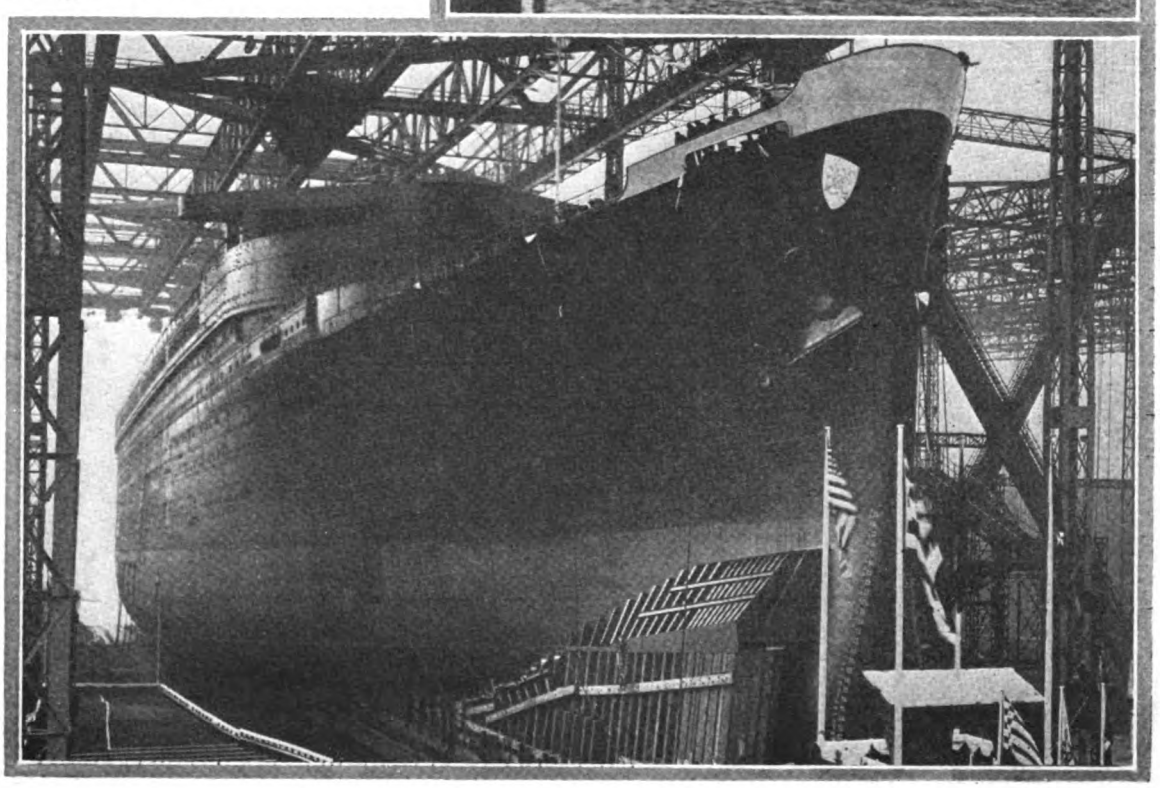
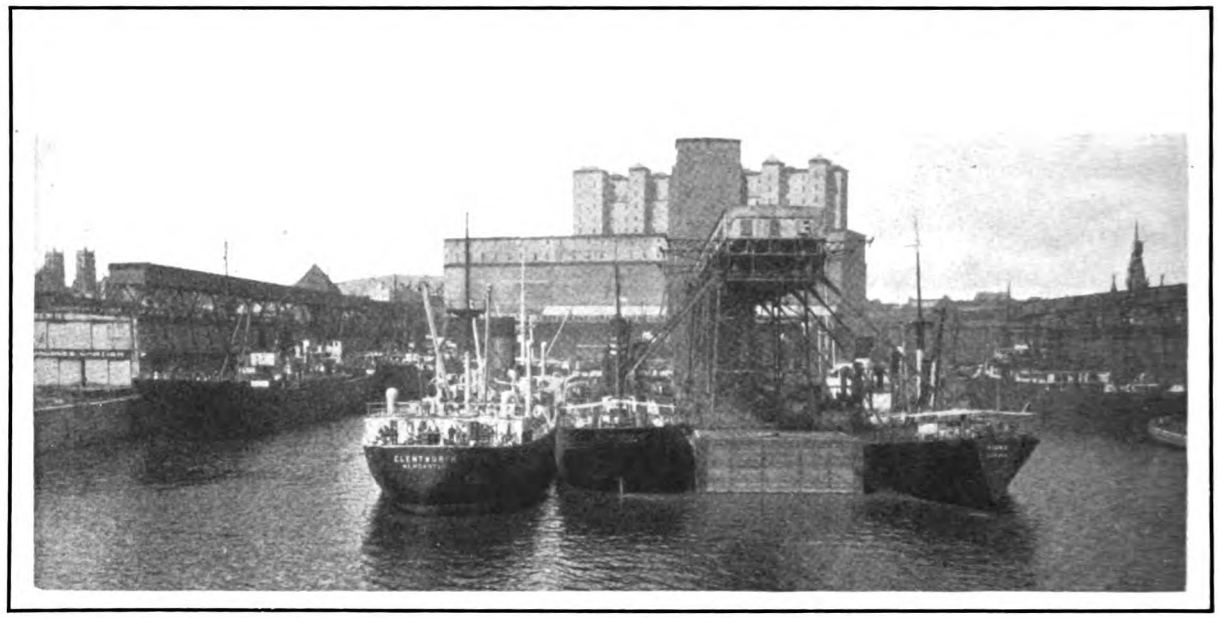


The new North German Lloyd liner Europa just after launching at the yard of Blohm & Voss, Hamburg, Aug. 15, 1928. American Ambassador Jacob Schurman acted as sponsor. As in the case of her sister ship the Bremen, thousands of enthusiastic spectators attended the launching. National feeling ran high



Germany's new super liner the S. S. Europa on the ways shortly before launching. The weight of the vessel at launching was about 32,000 tons. A new charactertistic in large ocean liners is the peculiarly shaped bulbous bow. At load draft the water line is fine. Below that it is extremely blunt. This shape reduces resistance and has been used for American warships for many years



Ships from Four Countries Loading Grain at Montreal

Export Grain Finds New Outlet

Vancouver as Great Grain Port Shows Trend to Pacific—Opening of Welland Canal Will Divert Grain from American Ports to Montreal

By E. L. Chicanot

AS FAR as most people in eastern Canada and the United States are concerned Vancouver's claim that the Pacific coast had become the greatest grain exporting zone in Canada came as a bolt from the blue. The general public of this territory has long rested comfortably in the assurance that the handling of the western Canadian grain crop belonged to its ports, that the long established routes out of the country would always prevail, while Montrealers were firmly settled in their conviction that their port was the greatest shipping point in Canada for grain and would remain so for all time. The announcement rudely jerked them from their complacency. What was this preposterous claim of the western upstart?

As eastern ports began to make investigation into this incredible claim it was explained that there had been a misunderstanding. Vancouver's claim was that in the last crop year the Canadian Pacific coast zone had handled a larger volume of the Canadian grain crop than the Canadian Atlantic coast zone, and the port of Vancouver more than Montreal. Montreal denied this but produced figures which left so scant a margin between those claimed by Vancouver as to mitigate in but slight degree the effects of the jolt inflicted upon complacent easterners. They suddenly were brought to realize that in a quiet way something very revolutionary had been happening out West. What were the rights of the case?

Vancouver's Claim Is Justified

The only figures which can be accepted for impartial consideration are the official ones of the Dominion bureau of statistics, and these leave no doubt as to the justice of Vancouver's claim to have wrested from Montreal premier position as an outlet for Canadian grain, and the ascendency of Pacific coast over Atlantic. In the last crop year, according to this record, Canada exported 338,442,484 bushels of grain of all kinds. The total of this to pass out by Canadian Atlantic ports was 81,874,371 bushels, and by Canadian Pacific seaports 87,366,178 bushels, giving British Columbia the leadership by approximately 5,500,000 bushels. Vancouver, the leading Canadian port on the Pacific, exported 79,714,512 bushels in the course of the year, while Montreal, unapproached among eastern Canadian seaports, shipped 66,615,081, or less than its rival by some 13,099,431 bushels. There would thus appear to be no shadow of doubt but that in the last crop year the Pacific zone surpassed the Atlantic in importance in handling Canadian grain for export and in the same regard Vancouver left Montreal behind.

Thus a situation has come about undreamed of ten years ago, which was scarcely regarded as a possibility half that number of years back, and which necessitates a drastic revision of accepted ideas of grain movement held by those who have failed to heed the changes which have been taking place in the period. In a fashion almost sensational Vancouver has attained to this startling position, but has by no means yet scaled the heights of her ambition. People who thought that the course of grain movements once mastered could be

This article was prepared for MARINE REVIEW by E. L. Chicanot, author of "Revolutionizing the Western Canadian Harvest," "The Panama-Pacific Route for Grain," etc.

relied upon as unalterable must be prepared for a good deal of a revolution. The ports of both eastern Canada and the United States seem due to lose out to some extent, though as far as eastern Canada is concerned there would appear to be compensations.

First of all Montreal has no cause to feel jealousy or uneasiness over what is happening at the Pacific coast. There is no doubt the great gulf port has already, or will soon have, to cede first place to Vancouver as an exporter of Canadian grain, but it seems unlikely that the volume to pass out of the Pacific coast can ever materially affect Montreal's position as Canada's leading port of grain export, the greatest grain shipping point on the continent, or in the world. In its last season Montreal shipped 194,435,569 bushels of grain, a volume nearly two and one-half times as great as Vancouver with its twelve months open season, and as much as the seven leading ports of the United States combined. This is explained by the fact that Montreal's outstanding position in grain traffic rests upon the amount of United States grain it handles, this amounting in its last year to 47.2 per cent of the total.

Has Become a Great Seaport

Canada can point to few such unexpected developments in the postwar period as the manner in which the stripling Vancouver has assumed the airs and responsibilities of maturity. But casually regarded before the war as the mere outlet for an insignificant volume of transpacific trade it has forged rapidly ahead in the years since the Armistice until it has come to rank among the great seaports of the world. Prophets in whom, through the accuracy of their prognostications, a good deal of reliance has come to be placed, such as Roger Babson, predict that within a quarter of a century Vancouver will become the greatest port on the entire Pacific coast. Between 1909 and 1927 the number of deep-sea vessels to enter the harbor increased from 71 to 1071 and their tonnage from 195,789 to 3,698,066. In the period Vancouver has changed from a port of import to one of export, though figures of both phases have grown enormously. The value of Vancouver's import trade in 1913 was $43,475,412 and in 1928 $74,002,310, while export trade has increased from $9,992,554 to $154,690,051.

The grain trade has, of course, been but one of many factors in bringing this about, but an important one. The development of this traffic has been one of the business romances of the postwar period. Engagement in a grain trade with Europe was quite uncontemplated until in 1920 by way of what appeared to be a reckless experiment a boatload of wheat was shipped from Vancouver to Liverpool, it being the general conviction that it could not pass through the torrid Panama canal zone without sustaining serious injury. When word was received that it had arrived at the British port in excellent condition it was dimly realized that a new phase of ocean traffic had opened up for the Pacific coast, though probably few people, if any, foresaw the proportion this business would attain and how it would revolutionize what had long been accepted as the logical route for western Canadian grain to take for export outlet.

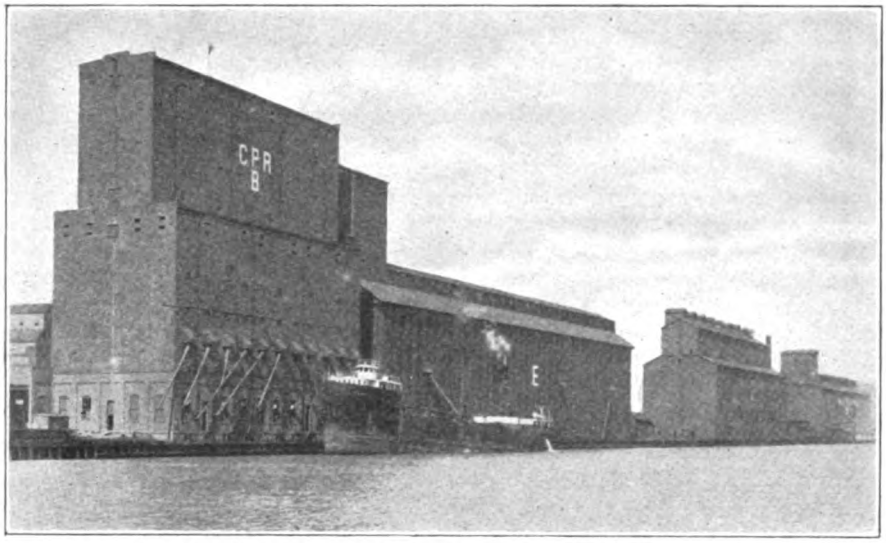
Vancouver immediately became feverishly busy fitting herself for the new role she was called upon to play, putting herself in shape for the new traffic she began to attract to her—establishing handling facilities and expanding a quite insignificant storage capacity. Before the end of 1921 more than two million bushels of grain had passed out through the port and in the next year about six million bushels. It became clear that the Panama-Pacific route for grain to Europe was to be permanent and English grain companies located at Vancouver and English grain brokerage firms opened branch offices there. A grain exchange was established, holding daily sessions, to transact all grain business and set the prices for coast grain.

Grain to Orient a Factor

Then another factor made its influence increasingly felt—grain buying from the countries of the Orient which were turning increasingly from rice to wheat flour as a staple food and favored the hard wheat of Canada. Vancouver's dreams became yet more expansive, and her ambitions grew. Then followed a vigorous agitation for a reduction in grain rates westward, which resulted in an application to the railway commission and concessions which considerably enlarged Vancouver's territory by making it as cheap to ship grain from any part of the province of Alberta and a goodly portion of Saskatchewan to the Pacific coast as to

Photo by Pacific Airways Ltd.

Harbor of Vancouver, B. C.—View Taken from the Air



Canadian Pacific Railroad Elevator, Fort William, Ontario, Canada

the head of the Great Lakes. There was accordingly nothing to prevent Vancouver from eventually securing the handling of one-half of the prairie provinces' grain crop.

Since that time this has been its aim, which it has never for a moment lost sight of, and it has been hectically adding facilities and increasing storage capacity in a frantic race with the steadily increasing flow of traffic coming to it. Substantial increments in the volume of grain handled correspond almost exactly to greater ability to accommodate. In 1926-27 Vancouver reached a record which seemed startling enough at that time of 44,439,738 bushels of grain exported.

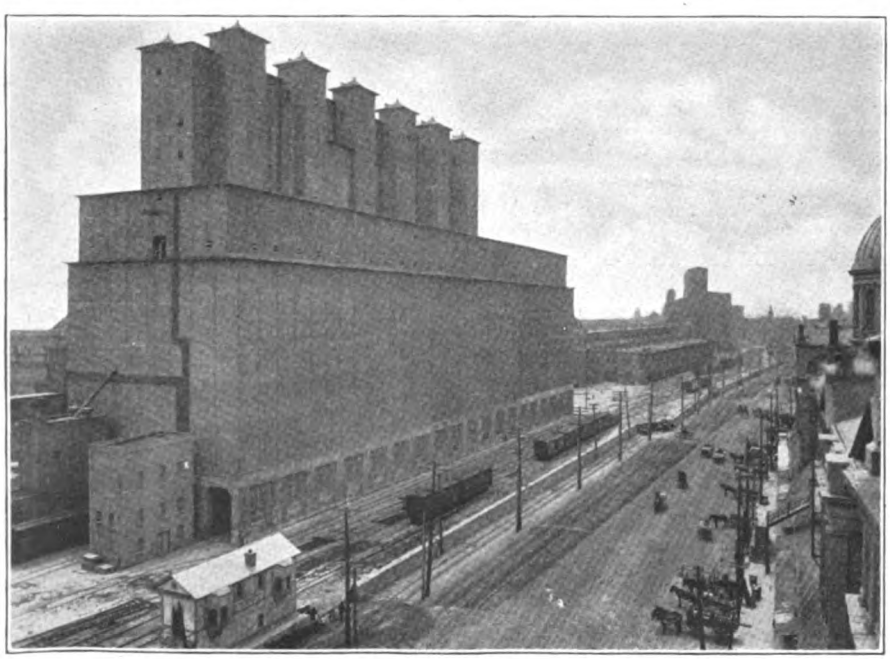
The 1927-28 crop year furnished Vancouver with its great opportunity. The port had become more adequately equipped to handle large quantities of grain and a vastly augmented storage capacity had been provided. The province of Alberta, its logical territory to draw from, had a banner crop of record proportions. Grain continued to pour steadily to the Pacific port after the St. Lawrence was frozen up and the wharves of Montreal were quiet and deserted. After shipments resumed on the St. Lawrence route in the spring it became reasonably certain that Vancouver was going to leave Montreal behind in the handling of the 1927-28 grain crop. Figures at the end of the year showed that the great Pacific port had exported nearly twice the volume of grain it did in the previous year, and more than 28 per cent of all the Canadian grain to leave the country.

This year if Vancouver does not attain her ambition to handle one-half of the Canadian exportable grain crop she will likely come very close to the mark. The port is confident of receiving between 100,000,000 and 150,000,000 bushels of the grain produced on the prairies at the 1928 harvest, and there is apparently nothing to stand in the way of this. From the record crop produced there will reasonably be a larger volume available for export, the yields in Alberta are outstanding, and a greater proportion should move westward for outlet. Vancouver port has practically reached a point where it is fully equipped as a grain shipping point, with an elevator capacity of 11,000,000 bushels as compared with 1,250,000 bushels six years ago. Roughly of the last Canadian crop exported United States ports handled 48 per cent, Canadian Pacific ports 28 per cent, and Canadian Atlantic ports 23 per cent, and there would seem to be no doubt but that the proportions will be further altered this year.

The first assumption is that this trend is going to work to the disadvantage of eastern Canada where so much port and other activity depends upon the grain movement from the west, but there are compensating circumstances. As far as the proportion of the Canadian crop to come to it for shipment is concerned Montreal can placidly regard what is happening at Vancouver and congratulate that port on its good fortune. It would seem reasonably certain that eastern Canada and the gulf ports will make up for the grain it loses to Vancouver and other Pacific coast ports by diverting a part of that huge 48 per cent of the Canadian exportable crop which is at present passing out of the country to foreign destinations by United States ports.

The big factor in effecting this is going to be the completion of the Welland ship canal which it has been promised will be in operation in 1930. Briefly this will permit the passage of the large Lake Superior ships up to 24-foot draft carrying grain from Fort William and Port Arthur, which now ply only as far as the Detroit river from Lake Erie to Lake Ontario, so that they will be able to come up the St. Lawrence as far as Prescott which is only 115 miles from Montreal. Unloading cargoes of grain there this grain will be transferred to 14-foot draft boats to be taken up to the great gulf port. A progress appropriation has already been provided for facilities at Prescott in the way of giant elevators and additions to the docks.

The direct result of the operation of the ship canal will be the passage



One of the Mammoth Grain Elevators at Montreal

of a greater amount of grain from the Canadian prairies through Canadian channels for export. The construction of the elevators at Prescott will obviate the possibility of discharge at ports in New York state, transportation between Prescott and Montreal involving nothing more than a switching proposition. It is likewise probable that after the close of the river a large quantity of grain will be moved down by rail, as demands at Montreal can be met in this manner by Prescott within six hours.

At the same time it is necessary to take notice of the increasing use of the combine reaper-thresher in western Canada which seems destined to become a factor of increasing importance in favoring the eastern route for grain, both through Canadian and United States ports. At the 1928 harvest some five thousand of these machines were in use in Alberta and probably more in Saskatchewan and Manitoba. Their use eliminates the ordinary delay between harvesting and threshing, permitting the grain to move from the field to the railway as soon as cutting commences. This will enable the railways to start moving the year's crop, it is estimated, about two weeks earlier than has been the case, which will permit a greater proportion of the grain crop to move out of the country before the closing of navigation on the Great Lakes. It is significant that as a rule more than half of the grain crop is exported from Canada between the commencement of the crop year, Aug. 1, and the end of December following.

Eastern Canada must perforce bow to the enterprise and progressiveness of the Pacific coast which has in so short a time wrested for itself so large a share of the Dominion's grain business, and this she can do frankly and without embarrassment. The accomplishment of that zone is all to Canadian benefit as tending to retain a greater part of the traffic in Canadian grain for Canadian ports and bring about something nearer an equality in the volume of each other's grain handled by the ports of Canada and the United States.

Barge Canal Traffic Continues to Grow

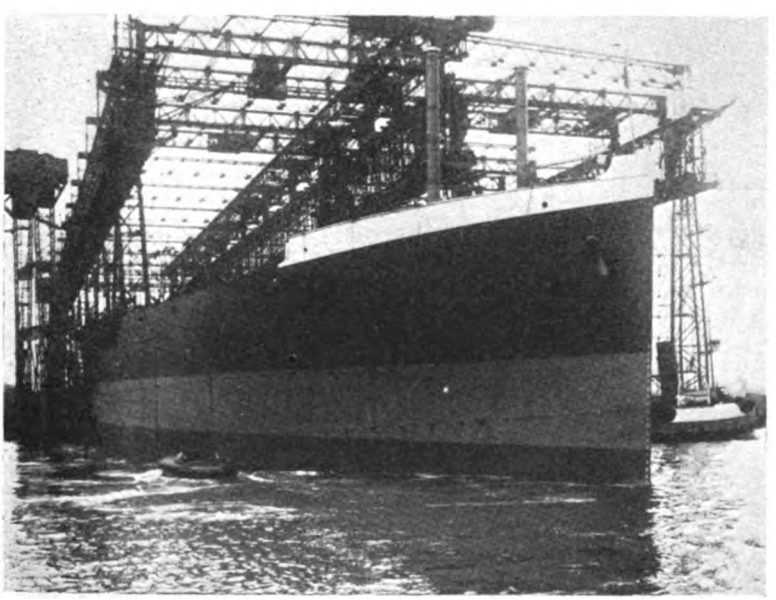
Commissioner Thomas F. Farrell of the division of canals and waterways, announced Aug. 28 that the New York State Barge canal system had again broken tonnage records. He stated that for the week ended Aug 25, 1928, there were moved over the several branches of the canal system, 117,695 tons, as compared with a movement of 108,203 tons for the corresponding week of last year. The best previous tonnage record was for the week ended July 7, 1928, when 110,764 tons were moved. The total tonnage movement for this year up to Aug. 25, was 1,719,962 tons, as compared with last year's movement of 1,439,192 tons, a gain of 280,770 tons, or 19.51 per cent.

That the New York State Barge canal is becoming increasingly useful seems evident. Only recently the motorship TWIN PORTS of the Detroit New York Transit Co. division of the Terminals Transportation Corp. of America made a record run from Troy to Oswego, N. Y. The run was made in thirty-nine hours and twenty minutes. It is said that this time has never before been equalled making a record trip between the two ports. The TWIN PORTS carried 917 tons of general merchandise on the trip at a draft of 9 feet aft and 8 feet 9 inches forward.

The TWIN PORTS and TWIN CITIES are diesel electric vessels designed by Henry Penton and built by the Great Lakes Engineering Works especially for canal and lake service. The two vessels were delivered in September and October 1923. They are 258 feet in length on deck, 42 feet in beam, and 18 feet 9 inches in molded depth. The deadweight capacity on canal draft is about 1500 short tons and 2600 short tons on full lake draft of 14 feet. They are the two largest vessels trading through the Barge canal system and offer the only express service between the Great Lakes and the Eastern seaboard. One ship leaves Detroit and the other leaves New York every week during the season of navigation.

Captain Frederic M. Premo, master of TWIN PORTS having reported the record run also said that he had found the Barge canal locking system the finest and fastest system in the world and that it has never been given credit for its excellence.

Build New Fore-end for Damaged Motor Vessel

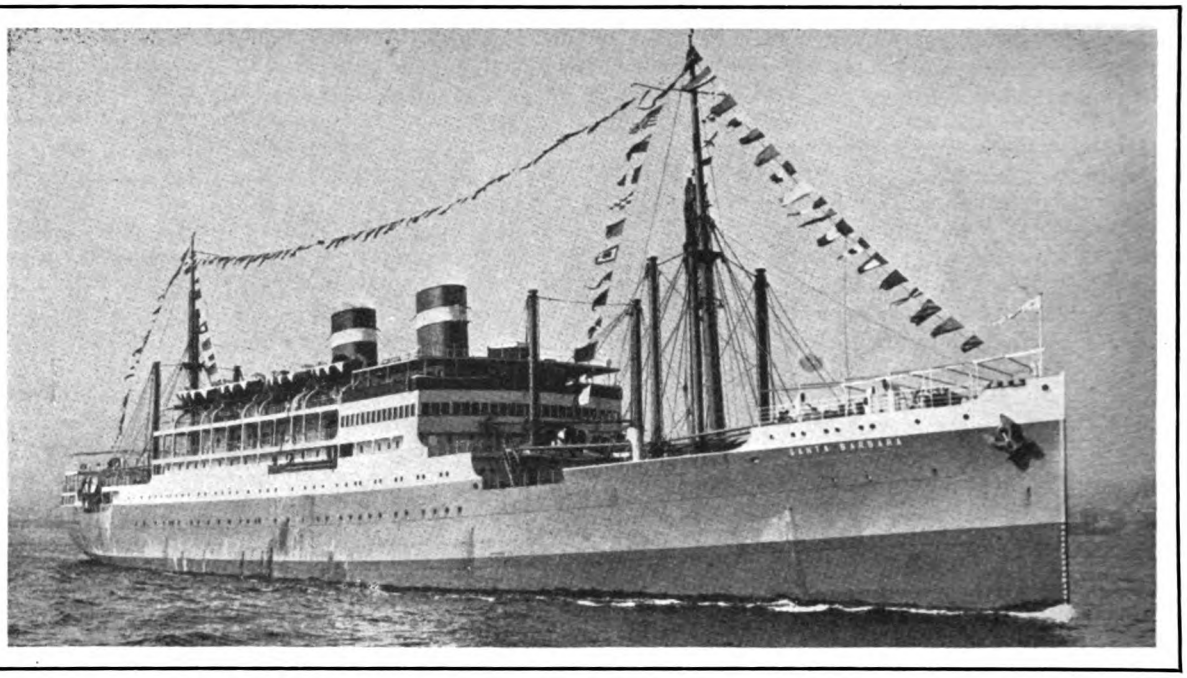


AN INTERESTING event took place recently at Queen's Island, Belfast, Ireland, when a new fore-end for the Royal Mail motor vessel, LOCHMONAR, *was successfully launched, as shown in the accompanying illustration.*

Toward the end of last year the LOCHMONAR *ran ashore on the Mersey revetment, and was so badly damaged that, in order to salvage her, it was necessary to cut off about* 150 *feet of the fore-end of the vessel. A temporary bulkhead was erected and the after part of the ship was towed to Belfast. On the completion of the new part both sections were placed in drydock, and were joined together.*

This vessel is of 9400 *gross tons and* 485 *feet in length, and was built by Messrs. Harland & Wolff, in* 1924, *and is propelled by diesel engines.*

The new bow portion is 175 *feet in length, and the launching operation, which involved unusual difficulties, was carried out most successfully.*



Grace Liner Santa Barbara—Twin Screw Diesel Passenger Vessel Arriving New York, Sept. 1, 1928

Santa Barbara, Second Diesel Liner Enters South American Run

ON SEPT. 27, the SANTA BARBARA, flying the American flag, sister ship of the SANTA MARIA, and second of two new diesel passenger ships built in England for the Grace line, will sail on her maiden voyage from New York via Havana and the Panama Canal to Peruvian and Chilian ports on the West coast of South America. She replaces the S. S. SANTA LUISA which vessel renamed EL SALVADOR is transferred to the Panama Mail lines route between New York and California via Central American ports. The Grace line now has two splendid new diesel passenger ships in its New York to West coast of South America service.

To Carry United States Mail

All of the vessels of the Grace line fly the American flag including the latest two though they were built in England by the Furness Shipbuilding Co., Ltd. The Grace line is an old American company and these vessels would undoubtedly have been built in American shipyards had not the differential in cost been too great. Under the terms of the Jones-White bill a mail contract was awarded the Grace line because these two vessels as well as the others of the fleet, American or British built, came within the requirements. No doubt these requirements had been drawn to fit this and other similar cases. In the Jones-White act after specifying that vessels suitable for carrying the mail shall be steel and steam or motor propelled it is stated that they shall be: (1) American built and registered under the laws of the United States during the entire time of such employment, or (2) registered under the laws of the United States not later than Feb. 1, 1928 and so registered during the entire time of such employment or (3) actually ordered and under construction for the account of citizens of the United States prior to Feb. 1, 1928 and registered under the law of the United States during the entire time of such employment. It will be noted from this that any future ships required by the Grace line to carry out its mail contract must be built in the United States. There is therefore, probably some significance in the release of the name SANTA LUISA and it may be that this name is now being reserved for an American built vessel similar to these two fine British-built passenger motorships.

A Duplicate of Santa Maria

The SANTA BARBARA, like her sister ship, the SANTA MARIA, described in the August number of MARINE REVIEW, was specially designed to meet the requirements of the passenger and cargo trade to the West coast of South America. The round voyage extends from the north temperate through the tropical into the south temperate zone and vice versa, with calls at sixteen ports outward and thirteen homeward involving the handling of a wide variety of cargo and a close maintenance of schedule.

General particulars of the SANTA BARBARA are: Displacement, 15,000 tons; length overall, 485 feet; beam, 64 feet; propulsive power in two eight cylinder engines, 10,000 indicated horsepower; speed, 16½ knots; cargo capacity 7000 tons. The engines, duplicates of those which were

briefly described for the sister ship SANTA MARIA, are of standard design and were supplied by Sulzer Bros., Winterthur, Switzerland. Engines of similar design are built in the United States by Busch-Sulzer Bros. Diesel Engine Co., St. Louis. Each engine which is of the two-stroke cycle, single acting heavy oil type develops 4000 brake horsepower at 100 revolutions per minute. Injection air compressors are driven by cranks at the forward end of the main crankshaft while the scavenging air is supplied by independent turbo blowers. These blowers also aid in engine room ventilation by drawing their air from under the engine room floor plates.

Electric Power for Auxiliaries

Electric power is generally used throughout for auxiliaries, the current being furnished by four 270-kilowatt 220-volt diesel generating sets, each driven by one 400 brake horsepower at 200 revolutions per minute, four cylinder, two stroke cycle, Sulzer heavy oil engine. There is also a 30-kilowatt generator driven by a solid injection hot-bulb oil engine. Two Sharples centrifuges are used for the purification of the fuel oil while a third centrifuge of similar make is used for purifying the lubricating oil. There are two boilers operating at 120 pounds per square inch working pressure and with heating surface of 885 square feet. Certain of the large engine room pumps are steam driven.

American Influence in Design

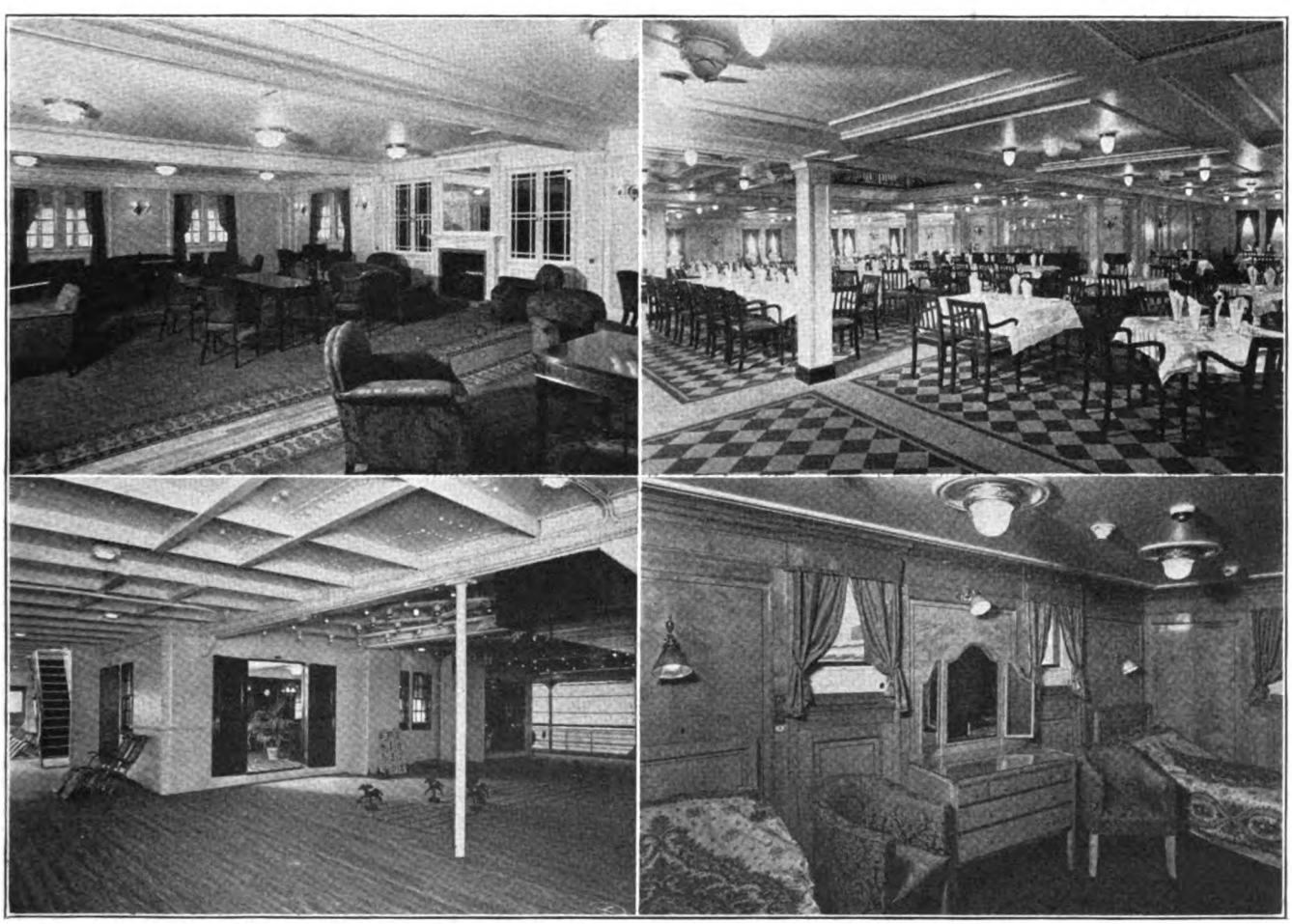
The American idea of making the ship a home-like, congenial, floating residence was carried out in every detail. There are numerous suites de-luxe and a considerable proportion of cabins have private baths. Inside staterooms have been eliminated and instead of berths, beds are the rule. Accommodations are arranged only for first-class passengers and the maximum capacity is 157.

Among some of the features of the SANTA BARBARA are a good sized swimming tank, space for golf practice and wide decks for dancing, sports or resting in deck chairs. Public rooms including the social hall, lounge, smoke room and veranda cafe are located on the promenade deck. This deck offers promenade facilities in all weather conditions as a glass screen with sliding windows is fitted forward and for some distance along each side for protected visibility.

To insure a maximum of seaworthiness the hull is subdivided by nine complete watertight bulkheads. A deep tank divided by fore and aft bulkheads into three compartments is fitted forward of the machinery space for carrying oil fuel. Oil fuel for ship's bunkers is also carried in side tanks in way of the auxiliary boiler room and in four double bottom tanks. Fresh water tanks are fitted in the double bottom and at the sides in way of the shaft tunnels. The vessel throughout, like the SANTA MARIA, has been constructed to obtain the highest class at Lloyd's and the American Bureau of Shipping, and to conform with the latest regulations of the United States steamboat inspection service.

Ample Refrigerated Cargo Space

A very important feature, in addition to passenger accommodations and general cargo space, in the earning power of this vessel, is the care with which refrigerated space has been provided. For this purpose there are six special insulated cargo chambers. In this space fruit and other produce may be carried and kept in good condition. The space for the



Interiors of M. S. Santa Barbara. Upper Left—Social Hall. Upper Right—Dining Saloon. Lower Left—Promenade Deck. Lower Right—Drawing Room in a Suite-de-Luxe

ship's provisions consists of eight insulated chambers. Refrigeration is provided by three vertical enclosed type, electrically driven CO_2 machine supplied by J. & E. Hall Ltd.

Electric power is widely used in all departments throughout the vessel including the galley and the laundry. Electric cooking ranges are fitted both in the passengers' and the crew's galley. There are other special features such as the purser's bureau, barber shop, printing room and a children's dining room. Careful provisions have been made for carrying baggage, mail and bullion.

Advantage has been taken of the latest advances in navigating equipment and in steering machinery. The SANTA BARBARA is equipped with a four-ram electro-hydraulic type of steering gear. This gear is operated from the bridge both by telemotor and Sperry electric control. Sperry gyro compass equipment and search lights are also fitted. Electric winches are provided for boat hoisting. The deck machinery and arrangement of derricks and cargo handling gear have been worked out with greatest care to give maximum efficiency and to provide exceptional power for heavy lifts which are characteristic of West coast South American freight traffic. In this trade the SANTA BARBARA will often be called upon to hoist out of the hold and on lighters single pieces of machinery weighing from 40 to 50 tons. The nature of the trade has produced in this vessel an unusually efficient combination for the accommodation of high class passengers and heavy freight. On her trials the 16½-knot speed guarantee was substantially exceeded without considerable effort.

In going to the diesel engine for the propulsive machinery of the SANTA MARIA and SANTA BARBARA the operating officials were evidently influenced by the very considerable possible saving in the fuel bill and as an important corollary the carrying of many tons less of bunkers or greatly increased steaming radius for the same bunkers and making it possible to bunker fully at the port of lowest cost for fuel. The experience now rapidly being gained in the operation of these two ships will determine finally the choice of power for the anticipated third similar vessel which must be built in the United States to meet the requirements.

The Great Lakes Dredge & Dock Co., it is reported by the commissioner of public works, has been awarded a contract, totaling $2,773,930 for straightening the Chicago river. Work will be commenced at once.

Pulverized Coal on Ships

THE second national fuels meeting was held at Cleveland, Sept. 17 to 20 under the auspices of the fuels division of the American Society of Mechanical Engineers. The meeting proved to be exceptionally interesting and many papers of real value were contributed. No problem can be of more importance ashore or afloat, than the conservation and economical use of fuel. The object of the fuels meeting, to rivet attention on this problem, is one of greatest usefulness.

At the marine session which was held on Sept. 19, two papers were presented as follows: *Pulverized Coal Firing of Marine Boilers*, by T. B. Stillman, engineer, Babcock & Wilcox Co.; and *Oil Firing of Marine Boilers*, by George A. Richardson, Bethlehem Steel Co. Both papers were interesting and had the particular merit of arousing questions and comments. In fact the discussion brought out many suggestions of value, some of which may lead to further experiments in order to overcome existing difficulties.

Mr. Stillman in his paper related clearly the various steps taken by his company during the past year or more in development of pulverized coal firing for marine boilers. At the conclusion of his paper he said: "Sufficient engineering work has been completed to assure the satisfactory operation over a long period of time of a marine pulverized coal installation, if care is taken in the type of apparatus installed and the quality of coal burned. Replacing hand firing on shipboard with properly installed pulverized coal burning equipment, not only results in the reduction in the amount of coal burned for a given horsepower output but also reduces the number of men required in the fire room and creates a willingness on the part of those remaining to become efficient in their duties and to remain with a ship in which the manual labor of hand firing has been eliminated."

In answer to a specific question as to the actual practicability of a marine pulverized coal installation in its present stage of development, Mr. Stillman stated that marine installations were now under way and that orders will be accepted for marine installations assuming full responsibility for their successful operation.

Mr. Richardson in discussing oil firing for ships did not go into theory or details with reference to different systems but rather discussed the position of this method of fuel consumption on shipboard compared with coal and the use of the diesel engine. He made the point that the economics of the situation will and must determine what the decision shall be in regard to fuel. In other words each has its place, but everything else being equal the burning of oil is undoubtedly the most convenient way yet developed by man for the creation of power.

Following Mr. Richardson's paper there was a very lively discussion relative to the position of the diesel engine, some holding that with the present very low cost of fuel oil any differential there may have been in fuel cost between the diesel and an efficient steam oil fired installation had entirely disappeared. But the diesel engine also had its defenders.

Both papers and a transcript of the discussion will be available in printed form in due course. It will be possible to get copies by addressing the secretary of the American Society of Mechanical Engineers, 29 West Thirty-ninth street, New York.

Pulverized Coal Tried With Success Abroad

THE STUARTSTAR, *one of a fleet of four of the world's largest insulated cargo vessels, is the first vessel on which the new system of coal powder fueling has been tried out. The vessel returned from a first trip to and from the River Plate and docked at the Victoria dock on Aug.* 31. *Experts were impressed by the advantage of the new plant which is known as the Clark Chapman turbo pulverizer unit system. Only one boiler out of the four has been fitted with the pulverized fuel installation, but the exhaustive test was so successful that the owners have decided to equip half of the boiler installation on the vessel with the apparatus and subsequently to extend the equipment to other vessels. According to a representative of the Blue Star line, the coal being used is small stuff which could not be used for hand firing and costs* 6 *shillings a ton less. With this new system the boiler efficiency compared with hand firing is increased by* 18 *to* 20 *per cent.*

Ship Construction Cost Increases Rapidly with Higher Speeds

THE shipping world is watching with keen interest the effect that the merchant marine act of 1928 is having on the development of the American merchant marine, but too short a time has elapsed since its enactment to disclose any immediate results. The shipping board and postmaster general have interpreted the act by ruling that the mail subventions to be awarded thereunder and its loan fund provisions should be used, as far as possible, to permit the building of larger and faster vessels than those now in operation. By this interpretation of the act they have emphasized the importance of shipbuilding in any attempt to establish and maintain an adequate and self-contained merchant marine and by requiring greater speed as a necessary feature of new vessels, they have presented one of of the fundamental factors that determine the cost of building vessels.

While other features contribute to increase or to decrease the cost of a vessel, such as the requirements of the owner for economy of operation and for the comfort and safety of passengers and crew, yet speed is fundamental in the character of design and its effect on the cost of construction is immediate and great.

Foreign ship owners have been and are now building vessels of a speed greatly in excess of that which prevailed a few years ago. The tonnage and especially the speed of a vessel are the most important features that an owner has in mind when contemplating the construction of a new vessel and particularly if such a vessel is to be employed in competition with foreign vessels.

How much will it cost per deadweight ton to build a vessel of a certain tonnage and of a specified speed? This is a certain inquiry addressed to a shipbuilder by a shipowner intending to purchase a modern vessel. If the shipbuilder's price is greater than the owner anticipated then he will question the reasons for the difference between the cost per ton of such a vessel and of another of different size and of less speed.

The measure of the value of a vessel cannot be determined by its cost per ton, without full knowledge of the elements of design. It is believed that the shipping world in general is unfamiliar with the marked effect of speed and of other characteristics of design upon the cost of a vessel. Exclusive of other factors, the cost per ton varies with the size, the number of decks, the draft, the co-efficient of fineness, the deck machinery, the equipment, the passenger accomodations, the amount of refrigeration, the steam pressure and, the speed, the most important of all.

If the owner of a vessel of 10,000 tons deadweight and of 10 knots speed intends to build another vessel of the same deadweight, but of 12, 14, or 16 knots, he will have to consider many factors that determine its cost. Thus each additional knot in speed requires an increase in horsepower; each increase in horsepower involves an increase in machinery weights; each increase in machinery weights requires a larger vessel to carry the machinery and the fuel for its operation. As a consequence, the cost of the ship will be increased for two principal reasons; because it is a larger ship, and it requires heavier machinery.

Inasmuch, as already explained, any increase in the speed of a vessel requires heavier machinery to develop the necessarily greater horsepower and as the machinery cost per pound is approximately three times the cost per pound of the weight of the hull, it will be seen that the total cost of the vessel of greater speed will amount rapidly although its deadweight tonnage will remain the same.

In order to throw light on this subject of the relation of the cost of a vessel and its speed the National Council of American shipbuilders has obtained the information appearing on the accompanying table, which show the approximate increases in the size of a vessel its weights and costs, when its speed only is changed and all other characteristics of the design remain the same. The machinery weights include both propelling and deck machinery and other auxiliaries.

This table shows that a 16-knot vessel of 10,000 tons deadweight will cost more than twice as much as a 10-knot vessel; that a 14-knot vessel will cost sixty per cent more and that a 12-knot vessel will cost twenty-six per cent more. As the speed and horsepower of a vessel increase, a greater amount of fuel and feed water is required with a consequent additional weight imposed on the vessel and a resultant decrease in its cargo capacity, both of which must be taken into account when vessels of high speed are considered.

The foregoing statement demonstrates the futility of comparing the cost of vessels on a tonnage basis alone, without carefully considering speed and all other factors that determine cost of construction.

Weight and Cost of Vessels Vary with Speed

Consider a vessel of single screw, 10,000 tons deadweight, 26 feet draft, machinery of high efficiency, geared turbines and oil burning water-tube boilers. Increase in speed will increase weight and cost in the percentages noted below:

Speed in Knots	10		12		14		16	
Length, feet	415		441.5		468		495	
Beam, feet	55.5		58		61		65	
Depth, feet	36		36.25		37.5		38	
Block-Coefficient	.80		.762		.725		.69	
Shaft Horsepower	1900		3650		5800		9200	
Hull, weight, tons	3030	86%	3400	82%	3900	78%	4600	75%
Machinery, weight, tons	480	14%	750	18%	1080	22%	1575	25%
Total	3510	100%	4150	100%	4980	100%	6175	100%
Weight, per cent	100		118		142		175	
Hull Cost Factor	3030	67%	3400	60%	3900	55%	4600	49%
Machinery Cost Factor	1440	33%	2250	40%	3240	45%	4725	51%
Total	4470	100%	5650	100%	7140	100%	9325	100%
Building Cost Per Cent.	100		126		160		209	

Note: The cost of one ton of machinery is approximately three times the building cost of one ton of finished hull weight. The resultant relative cost based on a 10 knot ship as 100 per cent will therefore be as shown above. That is a 16-knot 10,000 ton deadweight ship will cost over twice as much as a 10-knot 10,000 ton deadweight ship.

Statement of the National Council of American Shipbuilders on the effect of speed on the cost of the construction of vessels.

New Design Floating Dock Completed

THE steel, self-docking, floating drydock shown in the accompanying illustration was built recently for the British Tanker Co. by Sir W. G. Armstrong, Whitworth & Co. Ltd. at Newcastle-on-Tyne. This dock was constructed from plans prepared by Clark & Standfield, British consulting engineers, and the work was carried out under their supervision.

General dimensions of the new dock are: Length over platforms, 194 feet; length over pontoon, 172 feet 11 inches; overall width, 61 feet 3 inches; clear width between fenders, 44 feet 6 inches; overall depth of pontoon, 5 feet 10 inches. There are four pontoons each 41 feet 8 inches long. The space between pontoons is 2 feet 1 inch. The overall length of side walls is 152 feet 1 inch; overall height of side walls above edge of pontoon is 19 feet 7 inches; overall width of side walls is 6 feet 6 inches; corresponding freeboard of side wall, 3 feet 8 inches; height of keel blocks, 3 feet; depth of water required at site, 22 feet. In this dock a vessel of 600 tons displacement at a ten-foot draft may be lifted in two hours.

The dock is of the double sided, self-docking type known as the sectional pontoon and consists of a lifting portion made up of four duplicate pontoons attached to two parallel side walls which are continuous over their whole length. In fresh water this dock has a maximum lifting and carrying capacity of 750 tons, the corners of the pontoon deck at the front edges of the side walls then being level with the surface of the water. It is possible to sink the dock to a depth of 12 feet 6 inches over the keel blocks, the corresponding freeboard of the walls then being 3 feet 8 inches.

The walls of the dock are vertical sided of rectangular section and are set on top of the pontoons of which they form a continuation. The two walls are similar except that the starboard one carries on its top the valve and machinery houses and the port wall carries accommodations.

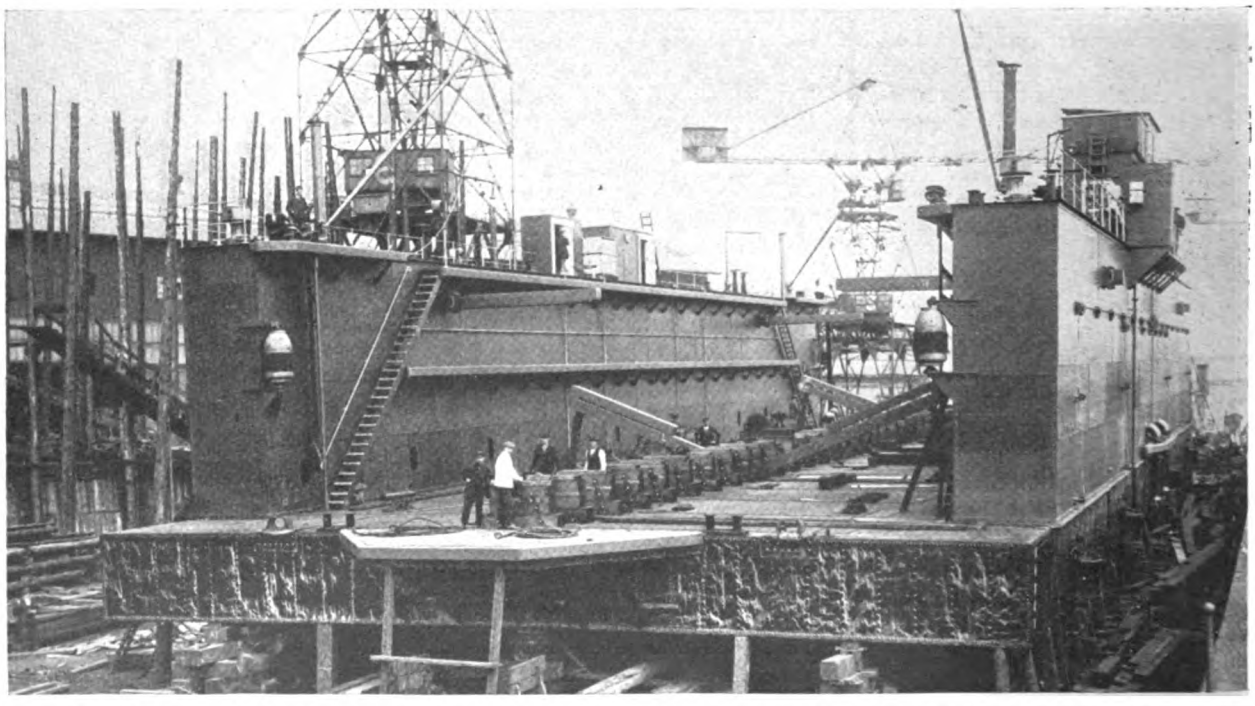
The main pumping machinery consists of two similar sets of centrifugal pumps each driven by semi-diesel engines through beveled gears and shafting. The pumps are of the horizontal, vertical spindle type and are located on top of the main drain along the bottom of the wall. Each pump is fitted with an efficient air ejector driven by its engine. When working together the two pumps are capable of lifting a vessel of 10 feet mean draft and of a displacement not exceeding 600 tons within a period of two hours from the time when the ship is in position until the center of each end of the pontoon deck has a freeboard of four inches.

In the starboard wall there is a centrifugal pump of 150 gallons per minute capacity. This pump is connected to a three-inch fire main carried along the starboard wall of the dock. The fire main is provided with a three-hose connection. Lighting is furnished by a two-wire, direct current system at 110 volts.

Four mechanical bilge shores are fitted, each consisting of 12 x 12-inch timber baulks hinged at one end near the center of the pontoon deck, the other end being attached to the head of a cast steel rack by means of which the shore is raised and lowered. A keel block is provided over every transverse bulkhead and breathing plate of the pontoon. There is an accommodation ladder at each end of each wall.

A hand capstan suitably geared and capable of exerting a pull of one ton is installed on the top deck at each corner of the dock. Mooring of the dock is done by means of four stud-link cables two inches in diameter, one at each corner of the pontoon deck.

The valve house is situated on top of the deck house and contains all the gear for operating the valves. Near each end of each wall a derrick post is provided. Three of these are fitted with booms and gear capable of lifting one ton. The fourth is electrically driven and is capable of lifting five tons. These derricks are arranged for lifting a load from the deck of a vessel in the dock into a barge lying alongside.



Steel self-docking floating drydock built by Sir W. G. Armstrong, Whitworth, Ltd., for the British Tanker Co. Completed and ready for launching. It was ready for service when launched

A Cycle in Transportation

How Ford Scrapped Surplus War-built Ships and Reclaimed Material for Land Service

Part III—Unique Land Uses Found for Ship Parts

EASTERN shipyards for dismantling the submarine-type vessels were the Federal Shipbuilding & Drydock Co., at Kearny, N. J., the Sun Shipbuilding & Drydock Co., at Chester, Pa., and the Southern Shipyard Co., at Newport News, Va. The work in the East started at Kearny, Nov. 18, 1925, with the OPEQUAN, a ship which had made five trips to South America in the 18 months of its active service before it was anchored in the "laid-up fleet."

By June 5, 1926, when the last part of the OPEQUAN'S hull had been cut to cargo size, a dozen more boats were in the process of dismantling at the three yards. The LAKE CANDELARIA, second to go to the scrapping dock, was the only laker taken apart on the Atlantic coast. It was an experimental ship. Work on it started Nov. 24 and ended Feb. 26. It was followed at Kearny by the ALAMOSA, the ASABETH and the MOOSEHAUSIC.

At Newport News the BRASHER was the first ship torn down. It was scrapped in 62 days, going to the dock Jan. 18. The next ship, the LORDSHIP MANOR, required almost twice that time. It went to the dock a week after the BRASHER and was not completed until May 19.

The dismantling got under way at Chester Jan. 12 with the CHARLOT, to be followed by the DAVIDSON COUNTY, the BAYHEAD and the SHORTSVILLE. Cutting the CHARLOT apart took 106 days; the next vessels required 106, 95 and 97 days. During the summer unusual speed was made with some of the ships at Chester, the MARGUS being scrapped in 54 days, the LACKAWANNA VALLEY in 53, the OPELIKA in 50, and the MONOMAC in 48. The average time at the three eastern shipyards during the first year was 94 days.

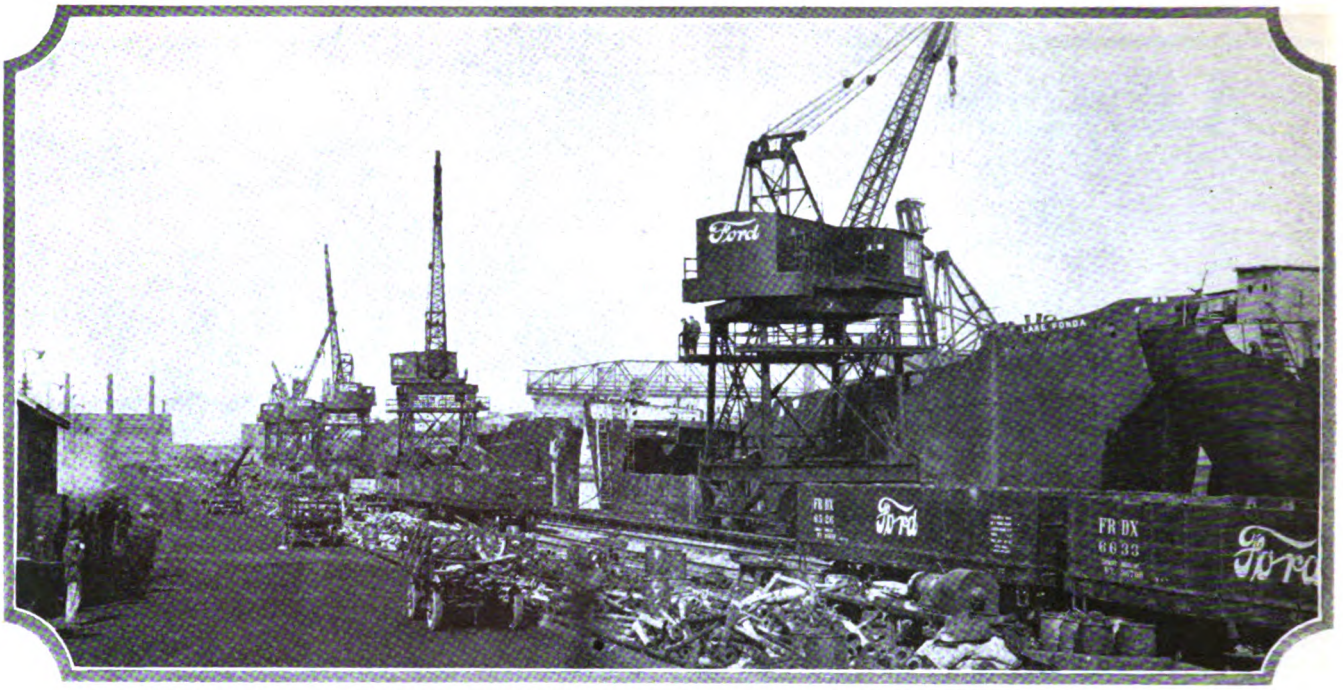
THIRD installment of the Ford Motor Co.'s own narrative of its scrapping of 199 surplus warbuilt ships purchased from the shipping board. The first installment appeared in the August issue of Marine Review and the second in September. The fourth will appear in an early issue.

The submarine-type boats were single screw steamships with a straight stem and elliptical stern. They were 335 feet 6 inches in length over all, 324 feet in length between perpendiculars, 46 feet in beam and 28 feet 6 inches in depth. They were oil burners of three island, single deck (with 'tween deck beams in Nos. 1 and 4 holds) cargo type, and had Westinghouse turbines with gear reduction of 1440 shaft horsepower and two Babcock & Wilcox water-tube boilers. The deadweight varied from 5085 to 5340 tons, though they were of identical design. The load draft was about 23 feet, and speed was 10½ knots.

The ships were schooner-rigged with two steel masts. They had full upper decks in the hull with partial second decks in the ends; also a raised forecastle, a long bridge and a full poop. At the forward end of the bridge deck there was a steel deckhouse containing the officers' quarters. On top of this was a wooden house containing a chartroom, captain's office and wheelroom. A wooden flying bridge was built at the top of this house.

There were also steel deckhouses, containing engineers' quarters, petty officers' quarters, galley, and so forth, built abreast and abaft the engine casing on the bridge deck. A wooden house containing a hospital and wireless room was on top of the latter houses on the after end. Boiler and engine casing of steel were carried to the level of the top of the deck houses.

The vessels had complete double bot-



Shops on the "disassembling line" at Fordson. The ships were warped from station to station for sequential scrapping operations

toms extending from the fore peak bulkheads to the tunnel recesses, subdivided longitudinally into six compartments. The compartments under the machinery space were for feed water. All other compartments carried fuel, oil or salt water ballast.

Decks as well as the inner bottom were worked level transversely and fore and aft, except that the upper deck had a straight line shear from the frame forward of the No. 2 hatch to the stem. The forecastle deck and the 'tween deck forward were carried parallel to the upper deck; the poop deck aft had a slight straight line shear.

There were seven water-tight hatches, six running to the upper deck and one forming the forward side of the deep tanks. There were five cargo hatches in the upper deck and one cargo hatch in the bridge deck; also a watertight cargo hatch in the top of the deep tank. The spacing of the frames was 24 inches in the fore and aft peaks and 27 inches elsewhere.

The machinery was located amidships, with the two main boilers abreast and having a screen bulkhead at their after end to separate the boiler and engine room. The carpenter, four boatswains, seamen and firemen were berthed in the poop. All other quarters were amidships.

The keel consisted of a flat plate with double butt straps of scantlings. The vertical keel was continuous from fore peak to after peak. There were two longitudinals or side girders in the double bottom each side of the center line. Extra longitudinals were fitted under the main engine seating and forward to withstand pounding.

Instructions were issued to the three eastern shipyards that everything possible from the ships must be saved. Early in 1926 an order listing some of the articles went forward to the shipyards:

Engine Room Equipment

Engines and boilers must be handled very carefully. Use manila rope on engines so that working parts will not be damaged. Any parts of engines that have to be removed should be boxed and marked: "Keep intact." Every bolt and nut has to be accounted for.

Engines; boilers; auxiliary condensers; blowers; steering engines; gages; thermometers; ammonia ice machines; firing tools.

Steamfitting, Plumbing, Etc.

All piping must be removed without burning or cutting pipe. Remove bolts with wrench if possible; but if impossible bolts may be burnt off. Flanges must not be broken.

Piping; valves; wash bowls; toilets; bath tubs; sinks; radiators; shower bath equipment; miscellaneous bathroom equipment.

Navigating Instruments, Equipment

Navigating instruments must be carefully removed and boxed and placed under deck very carefully.

Wireless aerials; wireless instruments; wireless batteries; compass; binnacle; signals; bells; lights (oil and electric); steering wheel; life buoys; sounding machines and instruments.

Deck Equipment

Most of this equipment can be placed under deck at forward hold, with engines, boilers, and so forth.

Winches; windlass; anchors and chains; masts and booms; stacks; pumps; derricks; rigging; life boats and work boats.

Electrical Equipment

All electrical equipment must be taken down very carefully so as not to damage or break. Fixtures, etc., should be boxed. Conduit should be taken out and loaded very carefully. A large quantity of electrical material can be placed under poop deck.

Conduit; light fixtures; alarm bells; switchboards; motors; lamps.

Kitchen Equipment

Kitchen equipment can be placed in kitchen of boat you are loading.

Galley range, coffee urns, water tanks, ice boxes, dishes, dish racks.

Furniture, Outfitting and Various Miscellaneous Equipment

All furniture should be placed under deck and packed snug so as to ride without shifting.

Chairs, desks, lockers, book cases, tables, benches, mattresses, bedding, settees and cushions, cabinet, safes, mirrors, window shades, flags, charts, maps and books, records, fire buckets, life belts, work benches, shovels, hammers, vises, wrenches and miscellaneous tools, tarpaulins and awnings, water hose.

The methods employed at the eastern shipyards were largely those common to all scrapping operations. Detachable parts were first removed. Then acetylene burners cut the steel structures into sizes suitable for loading into the lakers. After a hull had been cut near to the double bottom, it was towed on a marine railway or to a drydock for the final torching.

The great ship movement of 1926 started at the time of the removal of 29 lakers from Gulf of Mexico

waters. Early in February the LAKE ORMOC and LAKE GORIN were pulled from the New Orleans fleet and taken to the Jahncke company for complete overhauling. The same month the LAKE GOVAN and LAKE FARLIN, the only two vessels at Mobile, were moved and the LAKE FOSSIL and LAKE LASANG started north from Orange.

Two months later the movement was in full swing. By the middle of April all the remaining ships had left New Orleans. Late that month the LAKE BENBOW had been taken from the Orange fleet for reconditioning as the third steamer. In May came the main exodus from Orange. The LAKE BERDAN and LAKE FRIO departed on May 23, the last of the ships to leave southern ports.

A week later the LAKE FRENCHTON and the LAKE ELIZABETH reached Fordson, after a trip almost as eventful as that of the LAKE FONDULAC six months before. Caught in the ice pack of the North Atlantic and buffeted by gales, the barges were in bad shape when they finally reached the Great Lakes. Their prows resembled corrugated washboards.

The first ships from the South arrived empty. As soon as the towing operation was well under way, however, nearly all barges carried a cargo of submarine scrap in their holds. Some of the boats from the Gulf and most of those from the east coast were towed to the shipyards for loading before embarking for Fordson.

Extensive repairs were needed on the barges before they could be towed to sea. One boiler was conditioned on each ship to operate the auxiliary machinery. A mooring winch on the forward well deck and one on the after well deck were fitted out to be used in maneuvering in the canals. The mooring winch on the after end of that barge which was to be towed next to the tug was also fitted out for shortening the towline to the second barge.

Deck houses were easily converted into tool cribs

Lifeboats were repaired and equipped to government specifications. Life preservers were provided for each member of the crew. Sufficient lights were supplied to comply with all regulations. Each barge was furnished with a specified amount of equipment and food supplies.

All steering apparatus was reconditioned. Bilge pumps and manifolds were repaired. Cabins were fixed up to accommodate nine men. The captain's quarters and pilot house were put in shape. Steam lines to winches, steering machinery, bilge pumps and radiators in those cabins which were to be occupied, were reconditioned.

Coal was supplied to each barge, the amount depending upon the length of the trip. The three steamers —LAKE ORMOC, LAKE GORIN and the LAKE BENBOW—carried a quantity of coal as ballast.

The barge crews consisted of a captain, chief engineer, steward, three firemen and three seamen. The barge captain was under the orders of the tug captain, but had full charge of his own crew. The tugs carried a crew of 21 men, including officers; and the steamers a crew of 34 men.

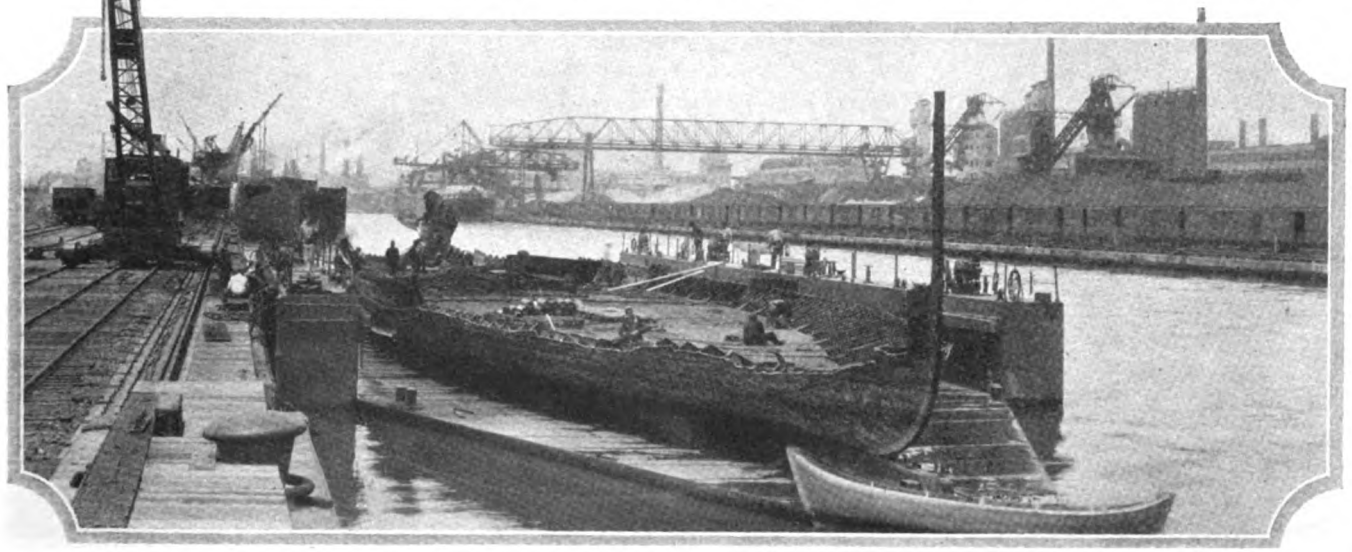
The steamers were able to make the entire trip from the East coast to Montreal and back without recoaling; but tugs were forced to stop at least once and occasionally twice for fuel, usually either at Halifax or Pictou. The first St. Lawrence river pilot was picked up at Father Point, Que. He guided the ships as far as Quebec where another pilot was picked up for Montreal. The pilot boat met the ships in midstream, and pilots were exchanged without the vessels stopping.

A representative of the Ford Motor Co. rode out on the pilot boat and boarded each ship as it neared the city. He obtained a list of needed stores and the ship's papers, and then left to proceed by rail to Montreal, where he arrived before the tows.

Through the courtesy of the Canadian government the Ford representatives were able to clear the ships without the formality of having the captains come ashore, thus saving an appreciable amount of time. In addition the company representatives had the necessary stores waiting at Lock No. 1 on the Lachine canal, and they were loaded on to the barges while they proceeded through the lock. Save in exceptional cases, it was not necessary for the barges to dock at Montreal.

Canadian government regulations were such that Ford Motor Co. tugs could not tow the barges through the Canadian canals. A tug or steamer having a tow could proceed through Canadian waters just so long as it was not necessary to drop its towline. Whenever that became necessary and the line was picked up again, a fee of $400 was charged. This meant that the Ford boats could

Double bottoms being cut up in dry dock



take the barges as far as Montreal but could not proceed with them through the canals, for the towlines would have to be dropped at each canal lock. Steamers and tugs, therefore, proceeded only as far as Montreal, turning back there. Other tugs were waiting for the barges on Lake Erie and Lake Ontario. Arrangements were made with Canadian companies for towing through the intervening waters.

An unexpected difficulty was encountered with the loaded lakers. The lockgates on the St. Lawrence river canals close "V" shaped, pointing upstream, to withstand the pressure of the downstream current.

The lake-type boats, which were built on the Great Lakes, were able to proceed down the St. Lawrence river through the canals because they fitted into the locks in such a way that the gates could be swung closed without trouble. With the same ships headed upstream and loaded, however, the gates could not be closed; they caught against the bulging fantails of the vessels.

To solve the problem it was decided to cut off a part of the fantails. A contract was entered into with the Welding Engineers, Ltd., of Montreal, for the work, a charge of $40 a ship for day work and $50 a ship for night and Sunday work being made. The cutters boarded each barge as it reached Lock No. 1 in the Lachine canal and stayed with the vessel until the job was finished. The steel was cut off in sections weighing about a ton each, two on the starboard side and two on the port.

Cutting was done with oxyacetylene torches. As each section was nearly free a hole would be burned large enough to fasten a shackle to it. A cable was then run through a winch and reeved to a block in the after mast. As the piece was cut away it was allowed to fall into the water. This quenched the heat and fire in an instant, after which the piece was hoisted back on deck.

The fantails were cut to conform to the arc made by the gates as they swung closed. The holes were opened in the poop deck, commonly known as the crews' forecastle. Crews on the barges lived amidships. There was no danger from the cut as any water shipped through the opening would run out on to the main deck and thence through the scuppers. Possible damage was still further lessened by the fact that the barges never had a following sea. During bad weather they would turn about to take the water over their bows. At the end of the towing operation the reconditioned steamer LAKE ORMOC, was backed through the canals, thus doing away with the necessity of cutting its fantail. This method would have been impractical for the barges, however, as it took two days to pull the LAKE ORMOC through three locks on the Soulanges canal alone.

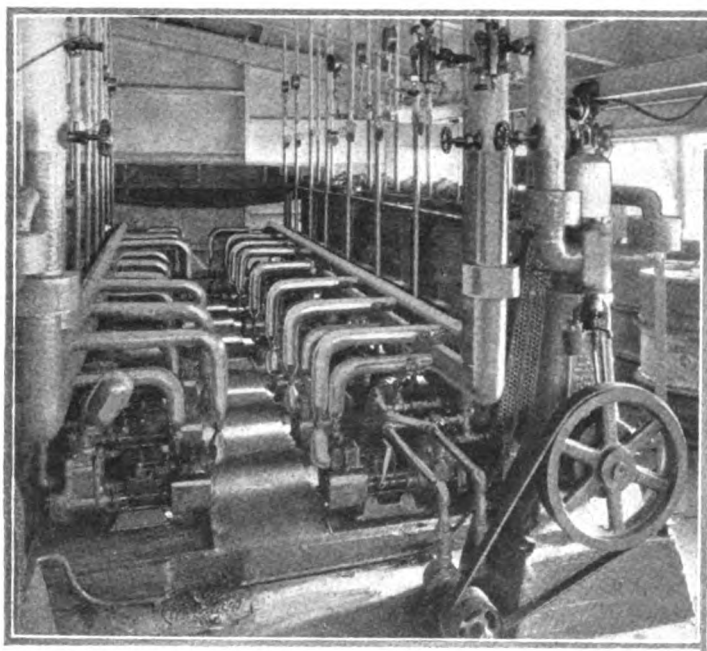
During the winter of 1926-27 the barges as soon as they were loaded were taken to Jamaica Bay to await the opening of spring navigation.

Seventy-eight ships were dismantled at the Fordson plant during 1926, and 70 during 1927. Work on the LAKE FRENCHTON, the second vessel scrapped, started June 2, 1926, and ended June 29. The LAKE ELIZABETH, third vessel, was finished July 1 and the LAKE FLYNUS, July 3. Thereafter a ship was completely dismantled every two or three days throughout the summer. The last ship dismantled during the year was the LAKE BLANCHESTER which was lifted from the floating drydock Christmas Eve.

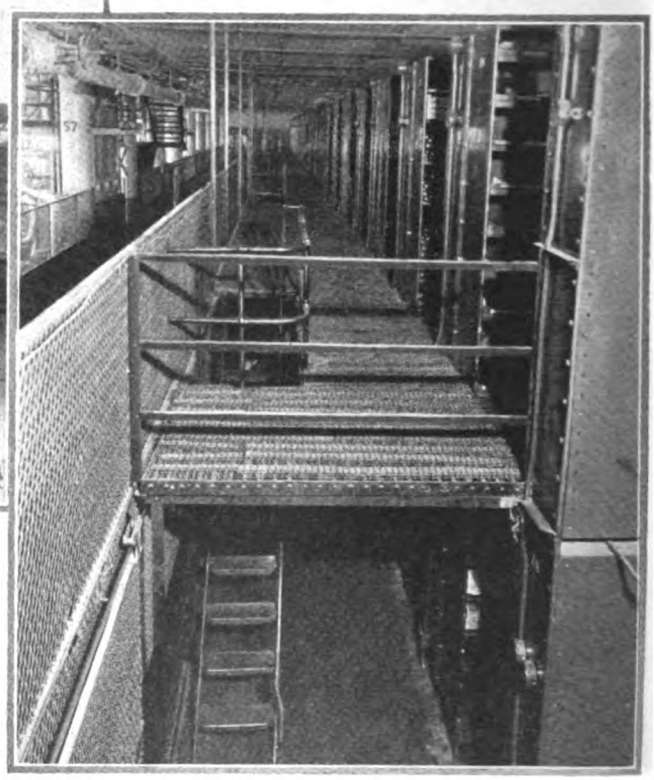
The dismantling operation was constantly changing. New methods were introduced, improved ways for handling the work were devised, new means for utilizing ship material were discovered. The dismantling operation of 1927 differed radically in many particulars from that of 1926. Experience showed how steps in the operation could be eliminated, how different jobs could be done more efficiently and more quickly, how more work could be accomplished by fewer men. Up to the time the last ship was lashed to the dock in November, 1927, changes were still being made. In the main, however, the dismantling followed a definite routine.

To insure a constant supply, ships were brought from the East in such numbers that a reserve fleet was es-

(*Continued on Page 60*)



Pumps from salvaged ships are now used to supply lacquer to the body line at Fordson



Salvaged gratings, stairways and railings from ships in service in the stockroom at Fordson

Safe Ships Embody the Experiences of Centuries of Sea Faring

By Capt. Charles A. McAllister

AT THE International Shipping conference, held in London in June of this year, the following statement was made: "In the last 55 years British shipping has averaged 4,000,000,000 passenger miles per annum and 200 passengers have been drowned per annum, or one passenger to every 20,000,000 miles."

Although it has been said that one can make any kind of a case from statistics, this is surely a remarkable record and shows wonderful progress from that of the seven years 1846 to 1853, when no fewer than 61 British emigrant ships were lost at sea, a state of affairs which resulted in the merchant shipping act of 1854, the beginning of active government control in British shipping so far at least as the laying down of safety regulations was concerned. There is no doubt travel on the high seas is becoming increasingly safer, and this is due in a large measure to the growth in size of ships, the change from wood to steel as a material of construction combined with the application of scientific methods to structural design, the change from sail to mechanical propulsion, to superior navigating equipment and aids to navigation, to government safety regulations, the licensing of officers and engineers, and last but not least, to the beneficent influence of the various classifications societies' rules and regulations.

We are by no means out of the woods yet when one recalls the mysterious disappearances at sea, with losses of all on board even within the last few years of vessels which were seemingly swallowed up without any known or apparent cause. The risks to which ships were subject in the good old days are described in the marine insurance policy as follows:

"Touching the adventures and perils which we, the assurers are contented to bear and do take upon us in this voyage, they are, of the seas, men-of-war, fire, enemies, pirates, rovers, thieves, jettisons, letters of mart and countermart, surprisals, takings at sea, arrests, restraints and detainments of all kings, princes, and people, of what nation, condition, or quality soever, barratry of the master and mariners, and of all the other perils, losses, and misfortunes that have or shall come to the hurt, detriment, or damage of the said goods and merchandises and ship, etc., or any part thereof."

Perils of Sea and Fire

The risks to which ships are now exposed are fortunately not quite so formidable, and we need only consider in ordinary peace times the first and third on the list, i.e., "perils of the seas" and "fire." The principal casualties to which vessels are subject are foundering through stress of weather, stranding and collision, where the damage may be such that water will enter in sufficient volume to offset the reserve of buoyancy and the ship sinks, in which case the only chance of saving the lives aboard is by the provision of suitable and adequate life saving appliances. From the point of view of safety to the ship herself it is essential that she be what is termed in nautical parlance, "seaworthy." The essentials for a seaworthy ship and the main requisites for safety are, sufficiency of structural strength, a proper measure of stability, suitable freeboard, reliability of machinery, and proper equipment. It is obvious that to be seaworthy for a particular voyage a vessel must also be efficiently manned and have sufficient fuel, fresh water, etc. It is interesting to note that the classification certificate certifies the ship to be in good and seaworthy condition and "fit to carry dry and perishable cargoes," and in the strict sense of the word a leaky ship is not seaworthy, even although she may be able to make port.

In addition to the main considerations of structural strength, stability, and freeboard it is obviously desirable (especially in a ship carrying a large number of passengers) that she be efficiently subdivided with the largest practicable number of bulkheads, so that the vessel will remain afloat after serious damage or at least keep afloat as long as possible and so increase the chances of getting the passengers and crew safely transferred to the boats and to shore or another ship. There is no branch of engineering where the problems are so complex and varied as in naval architecture. Not only must the designer meet the requirements of the specification with regard to deadweight, speed, fuel consumption, trim, maximum draft, etc., but due regard must also be paid to the regulations of the government inspection service and the construction rules of the classification society in which the vessel is classed. The safety of the vessel herself and of the valuable lives aboard in the event of a disaster to the ship are essential considerations in the design of a passenger vessel, but ship design is peculiar in the sense that any policy of playing safe entails a serious economic handicap to the owner, for while sufficient structural strength must be provided (and the structural problem does not lend itself to exact mathematical treatment) any excess of hull material not only entails increased costs of construction, but must be carried around for the life of the ship, with resultant loss of cargo deadweight.

Give Stability Without Stiffness

Every ship would have a suitable measure of stability for the service conditions without requiring undue care in loading, but care must be taken not to render the ship too stiff if she is to be popular with passengers, who, as a class sometimes ignorantly prefer comfort to safety. Again, a high standard of subdivision is desirable and in my opinion reasonable bulkhead requirements should be required by law in the case of passenger vessels, but here again it is obvious that there is a practical limit to the number and disposition of transverse bulkheads in the minimum lengths of cargo holds which experience has shown to be necessary for the carriage and economic handling of certain cargoes. When one considers the many and special types of vessels, ranging from the humble box shaped

This is one of the most important papers (its official title is "The Relation of Classification to Safety of Ships") prepared for presentation before the marine section of the National Safety council at the Seventeenth Annual Safety congress, to be held at New York, Oct. 1 to 5, 1928. The author, Capt. C. A. McAllister, is president of the American Bureau of Shipping, and is one of America's leading men in marine affairs.

barge operating in smooth water to the large passenger liner crossing the North Atlantic practically on schedule, I think you will agree that the naval architect's job is no sinecure.

There is no commercial undertaking in the world today that is regulated to such an extent as the shipping business. This is due to the hazardous nature of the seaman's occupation in earlier days and in some measure to the fact that the shipping business is international in character and highly competitive. Major disasters at sea receive so much prominence that the various governments are from time to time forced by pressure by public opinion to enact new and to amplify existing safety regulations. All maritime countries have shipping laws, promulgated with the best intentions, and while some of this legislation has been admittedly beneficial in its effects some of the enactments have been not so good. It is a truism that the less a government interferes in business the better for the business, but it must be admitted that the enforcement of regulations which have for their purpose the safeguarding of the lives of its citizens is a proper function of any government. Government control is universal and indeed essential in connection with such matters as the admeasurement of tonnage, which besides being the basis of dock dues, etc., is useful for statistical purposes; the entry of vessels into the national registry; the enforcement of rules of the road for the prevention of collisions at sea; detention of ships alleged to be unseaworthy, and restrictions on loading. Overloading beyond the regulation freeboard markings is one cause of detention and prosecution in every maritime country except the United States, which has as yet no compulsory load line law. It is impossible within the scope of this paper to discuss shipping legislation in all its aspects, but a few remarks regarding the safety regulations of this country and Great Britain, respectively, may be of some interest.

Safety Regulations Compared

The British merchant shipping act of 1854, which was the direct result of public opinion aroused because of the large numbers of lives being lost at sea, especially on emigrant ships, criginated the marine department of the British board of trade with power to appoint surveyors to investigate and report on accidents and damages and to inspect machinery, boats, and life saving equipment. The merchant shipping act of 1894 extended these provisions, and the merchant shipping act of 1906 not only amplified existing regulations, but enacted that certain requirements of the merchant shipping acts, including compulsory load line regulations be applied to foreign vessels operating out of British ports. Load line legislation in Great Britain was the result of popular feeling aroused by the agitation of a member of parliament, Samuel Plimsoll, who alleged that British vessels were being sent to sea in an overloaded and unseaworthy condition. In 1876 a law was passed requiring every British ship to be marked with draft marks and with the load line which the owner considered safe, but it was not until 1890 that load lines were required by law to be determined in accordance with specific regulations issued by the board of trade. It should be emphasized that the freeboard tables are not embodied in the act itself, the board of trade having authority to modify the regulations from time to time as may be found desirable after consultation with the classification societies authorized to assign freeboards.

Duties of Ship Surveyors

To give effect to the provisions of various merchant shipping acts, the marine department of the board of trade controls for all ships such matters as registration, tonnage admeasurement, load lines, collision regulations, signal lights, life saving appliances, and regulates the carriage of special cargoes, i.e., cattle, dangerous goods, and grain. The board of trade has also power to detain for survey any ship alleged not to be in a fit condition to proceed to sea by reason of defective hull, machinery, or equipment, overloading or improper loading, etc. In the case of ships carrying more than 12 passengers, the special rules with regard to survey and inspection are quite extensive, every ship being required to have a passenger certificate which is issued only after survey by the board of trade and which is valid for not more than twelve months. The surveyors in their declarations to the board of trade have to state:

a. That the hull and machinery are sufficient for the service intended and in good condition.

b. That the boats, life buoys, lights, signals, compasses, and shelter for deck passengers are as required by the merchant shipping acts.

c. The limits (if any) beyond which in the surveyor's judgment the steamer is not considered fit to ply.

d. The number of passengers which in the judgment of the surveyor the vessel can properly carry.

e. That the certificates of the officers and engineers are as required by the acts.

f. That the boiler safety valves and fire appliances are in such condition as is required by the acts.

g. The date of the last load line and whether same is still valid.

British Board of Trade Survey

For the guidance of the surveyors the board of trade issues very elaborate instructions. The "Instructions as to the survey of passenger ships" published recently is important, as the various regulations given regarding watertight subdivision, life saving appliances, etc., will represent the British proposals at the International convention for the safety of life at sea to be held in London next spring. It is probably the most comprehensive and complete set of safety regulations for passenger ships yet issued by any government authority. Like all other government regulations no rules for the scantlings or construction of hulls are included, but detail rules are given for marine boilers, steam engine shafting, fire extinguishing appliances, oil fuel installations, and survey of passenger accommodation. It is interesting to note that since 1923 the board of trade and the British classification societies have had a common set of rules for marine boilers. If a vessel is classed, the hull material test certificates of the classification society are accepted by the board of trade, also the hull scantlings, testing of double bottom tanks, etc., and except for the testing of boiler material and the supervision and hydrostatic testing of marine boilers there is no overlapping of inspection between the board of trade and the classification society's surveyors.

It should be noted that while the board of Trade's safety regulations and inspection procedure are quite comprehensive in the case of vessels carrying passengers the inspection of purely cargo carrying vessels is confined to safety appliances, except where on complaint of the crew that a vessel is unseaworthy the ship may be held for survey. The safety regulations of the British dominions (Canada, Australia, etc.), are pretty much on the lines of those of the board of trade. An important exception is the definite recognition given to the certificates of the classification societies, for example, the Commonwealth of Australia navigation act 1912-1920 explicitly exempts from survey all steamships not carrying more than twelve passengers to which classification certificates have been granted by any corporation for the survey and registry of shipping

approved by the governor general.

You have noted, no doubt, that I have dwelt at length on the British requirements for load lines, for the fact is that they have taken the initiative on all matters pertaining to safety of ships at sea, in this respect.

It is most regrettable that there is not a line in our statute books concerning load line requirements, which is fundamentally the basis of safety at sea. Numerous attempts have been made, covering many years, to bring about legislation of this kind in America, but to date nothing has been accomplished, although bills have several times passed either one or the other of the branches of our national legislature. A bill passed the senate during the first session of this congress, but it will require the united efforts of all persons interested in shipping to procure final enactment.

Steamboat Inspection Service

United States shipping legislation so far as safety regulations and inspection are concerned really began with the act of congress, 1871, when the steamboat inspection service in its present form was instituted. Unfortunately we have no department at Washington whose sole business it is to deal with matters affecting the merchant marine, and the steamboat inspection service, a branch of the department of commerce, is only concerned in the administration of the navigation laws relating to inspection. The operation of the steamboat inspection service, in so far as keeping its rules up to date, is hampered and limited by the fact that certain requirements (for example, the method of computing the thicknesses of boiler shells) are embodied in the law and cannot be changed except by act of congress. Another essential difference between our practice and British practice is that the hulls and boilers of ordinary freight ships are subject to the same inspection procedure as purely passenger ships; in other words, there is no such sharp line of distinction between the inspection of freight and passenger ships as is drawn by the British board of trade. The rules and regulations of the steamboat inspection service could with advantage be amended and brought up to date, and it would certainly be advantagous to all concerned if agreement could be reached on a set of American standard marine boiler rules which would be acceptable both to the American bureau and the steamboat inspection service, the only authorities having jurisdiction over marine boilers built in this country.

The early history of classification and classification societies is extremely interesting, but even to trace the development of our own American Bureau of shipping would make this paper unduly long. It is perhaps sufficient to say that classification had its beginning in England more than a century ago when wood was the only material of construction, and was the natural result of a desire on the part of marine underwriters to have an authentic record of ships for insurance purposes. As the idea of classification and registry of shipping originated with the underwriters it was to be expected that the classification societies were in the beginning largely controlled by marine insurance interests. As a matter of fact, the control of these technical organizations by committees of mangement on which all the various shipping interests (i.e., ship owners, underwriters, shipbuilders and marine engineers) are adequately represented is comparatively modern, dating back to 1890, when the British corporation entered the classification field in Great Britain with ideas on committee representation and ship construction rules which were revolutionary at the time.

Ship Classification Societies

The classification societies in existence today are Lloyd's Register, and the British Corporation with headquarters in Breat Britain, Bureau Veritas in France, Norske Veritas in Norway, Germanischer Lloyd's in Germany, Registro Italiano in Italy, and the American Bureau of shipping in the United States. Some of the older societies make pretensions to being international as far as the scope of their operations is concerned, but the working alliance and mutual agreement of the American Bureau, British Corporation, Registro Italiano and Imperial Japanese Marine Corporation, by which the surveyors of each society carry out in its own territory surveys on behalf of the other parties to the agreement, is truly international and cooperative in the best sense. My main purpose in enumerating these well known societies at this time is to emphasize the fact that every maritime country with any pretensions to a merchant marine has found it necessary to develop its own national classification society.

The American Bureau of shipping, to which I have the honor to belong, had its beginning in 1862, when the legislature of the state of New York passed an act incorporating the American ship Masters' association, which charter and title was in 1898 changed to the American Bureau of shipping. The American Lloyd's was combined with the bureau in 1882. The American bureau in 1908 absorbed the United States Ship Owners, Ship Builders and Underwriters association, and in 1916, acquired the Great Lakes register, which is now the Great Lakes department of the American bureau. In 1916 the bureau was thoroughly reorganized to cope with the enormous volume of tonnage building in this country during the war emergency, since when the bureau has undoubtedly reached a high standard of efficiency. The board of managers is influential and thoroughly representative, and every effort will continue to be made to render efficient service in the interests of the American merchant marine. It should be emphasized that the bureau is not a profit making concern, all funds accruing to the society from classification fees, etc., being used solely to defray operating expenses, any surplus being utilized for its extension and improvement.

Function of Classification Bodies

The principal functions of a classification society may be briefly stated as follows:

a.—To provide a register book giving essential particulars of the hulls and machinery of the vessels classed with the society, the classification assigned to each vessel, together with the dates when surveys were carried out, etc.

b.—To issue certificates of character for merchant ships, their machinery and equipment, i.e., classification certificates, certificates of worthiness, etc.

c.—To prepare rules for the construction of hulls and machinery, including material specifications and detail regulations for the carrying out of periodical surveys, etc. The rules are necessarily modified from time to time to keep pace with developments in shipbuilding and marine engineering, and are the standard by which the eligibility of a vessel submitted for classification is determined.

d.—To carry out other work relating to the structural design, construction, and maintenance of merchant ships such as the assignment of freeboards which may be delegated to the society by the proper government authority; also when specially requested by owners or builders to investigate questions such as subdivision, etc., which affect the safety and seaworthiness of the ship.

The following summary of the work of the surveying and technical staffs

of the American bureau may be of some interest:

1—Classification Surveys of Vessels

a—Examination of Plans

Certain detail plans of the hulls and machinery of new vessels intended for classification are required to be submitted for approval before the work of construction is commenced. Plans also may be submitted by the owners or builders of unclassed vessels or vessels of novel design where the approval of the society is specially desired.

b—Testing of Materials

The testing and inspecting of the materials of construction, i.e., hull and boiler shapes and plates, forgings and castings for hull and machinery, anchors and cables, etc., is a requirement of the rules in the case of vessels building to class. Testing of materials going into unclassed vessels is also carried out when this is specified by the purchaser, and material for other engineering purposes may also be tested by the surveyors to purchasers' own specifications. Testing work, including the issue of certificates of test, etc., constitutes an important part of the work of a classification society.

c—Supervision During Construction

The hulls and machinery of all vessels specified to be built to class must be supervized by the surveyors during construction. The services of the surveyors may also properly be utilized for the survey of machinery, etc., not necessarily intended for classed vessels in cases where the manufacturers may desire certificates of test and inspection.

2—Surveys of Vessels in Operation

a—Classification Surveys

The surveys carried out for the purpose of classing vessels already in operation are on the lines of the requirements for periodical surveys, according to the age of the vessel, except that the scantlings of the plating, etc., are carefully gaged and compared with the Rule requirements.

b—Surveys for Maintenance of Class

These include the regular docking surveys, special periodical surveys, and boiler surveys. The scope of these various surveys is detailed in the rules.

c—Damage Surveys

When a vessel is damaged she must be submitted for examination to determine whether the seaworthiness of the hull and machinery has been impaired, and if so such repairs must be effected as will render the ship seaworthy. At the request of the owner efficient temporary repairs may be accepted by the surveyors until such times as permanent repairs can be carried out. If the damage is covered by insurance, the underwriters are obligated to put the ship into the same efficient condition as she was prior to the casualty, and it is the duty of the classification surveyor to require that the repairs are such as will place the ship in a condition to meet the classification standard of the rules. Special certificates of seaworthiness are issued on the satisfactory completion of all damage repairs.

d—Refrigeration Surveys

On vessels carrying refrigerated cargoes the refrigerating machinery and insulated spaces are subject to periodic examination if an R. M. C certificate is desired. Surveys of insulated holds, etc., if made at the loading port prior to refrigerated cargo being loaded are also carried out at the request of owners and special loading certificates issued.

e—Condition Surveys

Condition surveys are made on unclassed vessels at the request of owners to determine the physical condition of hull and machinery and their suitability for particular voyages and trades, and seaworthy certificates issued in connection therewith if found warranted.

3—Technical Work Carried On

In addition to the examination of plans a large amount of work is done by the technical staff in making investigations in connection with the preparation of new rules and analyzing reports of vessels in service with a view to determining what amendments in existing rules are desirable. The bureau is also represented on certain standing committees of the American Society for Testing Materials, American Marine Standards committee, American Engineering Standards committee, National Fire Protection association, American Welding society, and on important government committees, such as Fuel Conservation committee, Ship Construction committee, and Load Line committee.

The American Bureau of shipping is officially recognized by the United States government in the merchant marine act of 1920, which states as follows:

"That for the classification of vessels owned by the United States, and for such other purposes in connection therewith, as are the proper functions of a classification bureau, all departments, boards, bureaus, and commissions of the government are hereby directed to recognize the American Bureau of shipping as their agency so long as the American Bureau of shipping continues to be maintained as an organization which has no capital stock and pays no dividends."

The board of supervising inspectors of steam vessels at its annual meeting in Washington in 1916 adopted section 9 of rule VI as follows:

"In the inspections of hulls, boilers and machinery of vessels the rules promulgated by the American Bureau of shipping respecting material and construction of hulls, boilers, and machinery, and the certificate of classification referring thereto, except where otherwise provided for by these rules and regulations, shall be accepted as standard by the inspectors of this service."

Although the ship construction rules of the British classification societies are accepted by the board of trade as a standard, the recognition is not so definite as is given by the various Dominion governments except in the administration of the load line law where freeboards are assigned by the classification societies as direct agents of and responsible to the government. In France, Italy, and Japan the national classification societies are authorized to carry out surveys on behalf of their respective governments, and the growing tendency to utilize the services of the classification societies in all maritime countries is undoubtedly to the advantage of all concerned. It should be pointed out that the primary concern of the government in laying down regulations is safety of life, while the underlying idea of classification is safety of the ship herself. Compliance with government safety regulations is of course compulsory. Classification, on the other hand, is not obligatory, so that the owner who voluntarily builds his vessels to the rules of a classification society and carries out the periodical surveys required for maintenance of class is surely entitled to some consideration from his government.

International Safety Agreements

The shipping business being more or less international in character, it is extremely desirable that the various maritime nations should reach agreement on general principles governing safety regulations if only in view of the great convenience to ship owners which results from the mutual acceptance of each others national certificates. Largely due to the war, the 1913 international convention for the safety of life at sea was not generally ratified by the governments concerned. Since that time, however, passenger ships have been

built in substantial accordance with the convention rules, and the experience gained thereby shows that some modification of the regulations is desirable and indeed necessary before international agreement is possible. It is for this reason that the international conference to be held in London next spring is so extremely important, and you may be interested to know that a ship construction committee under the chairmanship of Admiral Geo. H. Rock was recently formed under government auspices with a view of investigating the whole question of safety of life at sea in order that the delegates from the United States to the forthcoming conference will be fully informed as to the views of our ship owners and builders. I fully anticipate that international agreement will be reached at convention will be ratified by all the principal maritime nations. It will then be possible for the steamboat inspection service to bring its rules and regulations in line with the most modern safety requirements for passenger ships. It might not be out of place here to express what I consider to be the essentials for safety regulations in general and particularly those affecting merchant shipping:

a. Government supervision should be kept to a minimum. Regulations should be international in character as far as practicable.

b. The shipping law should provide the necessary administrative machinery, and as far as safety requirements are concerned should confine this conference and that the 1929 itself to general principles, leaving the proper administrative authority, i.e., department of commerce, power to lay down detail rules in accordance with these principles and to modify same from time to time with developments in shipbuilding and marine engineering.

c. The rules and regulations should be fairly and equitably administered by competent and proper authorities with due regard to uniformity of action in the various ports and districts.

d. Unnecessary duplication of surveys and inspection should be avoided. In this connection the various governments concerned should as far as practicable recognize the certificates of their own classification societies.

Train Human Element in Ship Safety

By Arthur J. Grymes

INDUSTRIAL safety engineering has coined the maxim, "A safe plant is an efficient plant." Paraphrasing, it can unequivocally be stated that "The safe ship is an efficient ship." In one form or another this thought has been expressed so repeatedly that it has become embodied in the working creed of the safety engineer. The truth of it seems to have been accepted without question—as real truths often are—without critical analysis, without attempt at proof.

On the subject of industrial accidents, President Calvin Coolidge quite recently wrote, "It is difficult to believe that industrial accidents have reached an irreducible minimum while the death toll is probably not under 23,000; and the nonfatal injuries approximately two and one-half million each year. Especially should we be hopeful of greater improvement in this record if those who claim that 85 per cent of those accidents are preventable are even approximately right."

Men and women are much the same the world over. Industrial accidents as well as marine accidents have the same root evils, though the conditions and causes which make for accidents in various industries as well as on different types of vessels, for example, will obviously vary according to conditions and standards. The importance of the human element in this subject, however, the men and the women workers, is basically no different, be the employment on board ship or wharf, field or factory, office or home.

It is of significant interest to observe that careful records concerning personal marine accidents, which have been compiled over a period of years by large American steamship operators, have shown that from 85 per cent to 90 per cent of their reported accidents can be classed as "preventable accidents." It is not a mere coincidence that these figures obtained by the compilation of marine accidents are practically the same as the percentage of "preventable accidents" which industrial accident statistics show, but it is conclusive proof that the marine industry is no different from any other industry and that the human element is the same important factor in every industry.

Should Remove Cause of Danger

When accidental injury is prevented by protecting the body of the workmen, it does not necessarily follow that the accident capable of causing the injury is eliminated. It is safe to assume that the application of protection alone does not greatly reduce injury occurrence in any industry and cannot, of itself, make a safe plant, a safe wharf, or a safe ship. Engineering revision of the plant, the wharf or the ship and revision of the workers' mental attitude can accomplish it. When injuries are prevented by eliminating the accident cause, as takes place when revision is applied, not only are injuries and accidents extirpated but the lost time is diminished.

Most maritime accidents are not the result of a single cause, but of the coincidence of a number of contributing causes, each of which may be, in turn, the culmination of a long series of events. They may have to do with a ship and its equipment or with a wharf and its facilities for loading and unloading. In each of these some element of inefficiency may have been introduced—improper maintenance, for example, defective construction, bad design. On the other hand there is the importance of the human element, and here is encountered poor technique, lack of skill, inattention, absence of proper supervision, fatigue, defective vision and a host of other contributing causes that affect both safety and efficiency. Eliminate all or any one of them for the sake of preventing accidents or for any other reason, and efficiency cannot help but be improved.

There is, moreover, an indirect relationship. It requires the highest grade of intelligent operating management and responsive personnel to eliminate accidents and to reach that desideratum of maritime safety engineers "to reduce marine accidents to the minimum." There must be effective organization, co-operation and spirit. Exactly the same requirements must be fulfilled in order to attain a high order of operating efficiency. The steamship owner or op-

(*Continued on Page* 62)

This paper is to be presented by the author, Arthur J. Grymes, president of the National Board of Steam Navigation, before the Marine section of the National Safety council at the seventeenth annual meeting at New York, Oct. 1 to 5, 1928.

Dock Management Progress Section

How Successful Dock Operators Have Met Problems of Giving Best Service to Ships

Crane Attachments Make Possible Lifting of Heavy and Unwieldy freight. Left—Granite Blocks. Right—Large Size Pipe

Mechanical Handling of Freight Reduces Ship's Port Expenses

By Willard C. Brinton
Part II

WITH proper study there would seem to be no excuse for the continuation of hand-labor methods for sorting bags of coffee, bags of cocoa beans, castor-oil beans, etc. Practically all the coffee, arriving in New York is "humped" by men carrying 130-pound bags on their shoulders. Coffee is so mixed in the ships that a postoffice operation is required to sort each bag to its place on the pier.

Even though cocoa is loaded on the African coasts in surf boats, where men wade out through the water to these boats with one bag at a time, there are possibilities for getting the freight into the ship so that it would not be necessary for men to carry each bag in America where the longshoremen get 85 cents an hour with time and a half for over time. As many as 70,000 bags of castor-oil beans have recently arrived in New York on a single ship, hopelessly mixed in the stowage. It is not easy to engage men who are able to carry these heavy bags of 160 pounds each. Certainly the men themselves would respect their employers more if the employers made the work simpler and easier.

Cargo Stowed in Blocks Eliminates Sorting

A rope cargo sling is commonly used in handling bag cargo. The rope sling remains today in the same form as it was when man first put freight into ships or developed rope manufacture. If a draft of bags or other materials is taken from a ship in a rope sling, the draft tends to fall apart the moment it reaches any support to carry the weight. For a century or more pier workers all over the world have attempted to catch the draft at the moment of its landing and so hold the sling rope as to keep the draft together. Some such method is necessary if drafts as a whole are moved away from the ship direct to a pile. There has been

From a paper presented at the national meeting of the A. S. M. E. Materials Handling division, Philadelphia, April 23, 24, 1928. The author is president of the Terminal Engineering Co. Inc., New York. The photographs used as illustrations were supplied by the company at the request of the editor. This article is in two installments and Part I appeared in the September number of MARINE REVIEW.

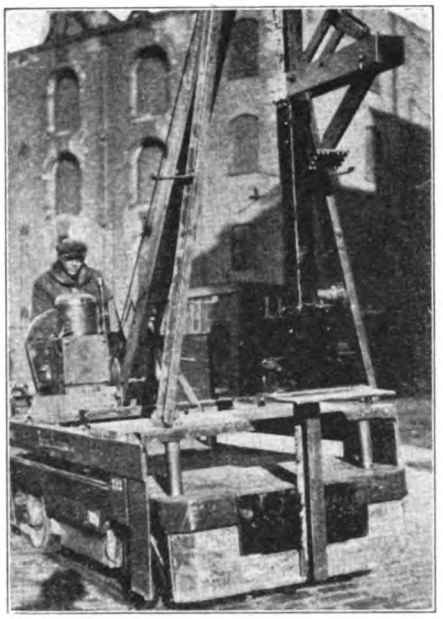
great loss of time and breakage of freight due to the drafts falling apart while being moved on the pier. This is particularly true when drafts are placed on trailers without springs or rubber tires and moved at high speeds. Then too the falling apart of the draft often causes smaller drafts to be used in an attempt to remedy the condition.

A New Type of Sling

There has recently been developed a device known as a sling "TEK" which can be placed on any rope sling to make it automatic. The sling TEK slips to the tightest position and holds the sling at that point. When desired the locking cam is quickly released by hand or foot pressure. Larger drafts are possible and drafts can be loaded more quickly since there is no possibility of their falling apart.

Another economy feasible by this device results from the ability to carry all drafts of any kind by crane equipment by merely hooking the crane directly to the TEK, thereby eliminating head room usually required by the long end of the sling. This point is important because it permits the use of pier machinery to pile drafts where with the long sling there would not be sufficient head room to make mechanical piling effective.

In many parts of the world ships must still be loaded from lighters. It is difficult to make up the drafts with the lighter pitching in rough water and the ship itself is likely to be delayed. A simple hoist on the shore might lift whole drafts to or from lighters. Wherever lighters are used there is a possibility of equipping each lighter with a quota of non-slipping slings to obviate the re-



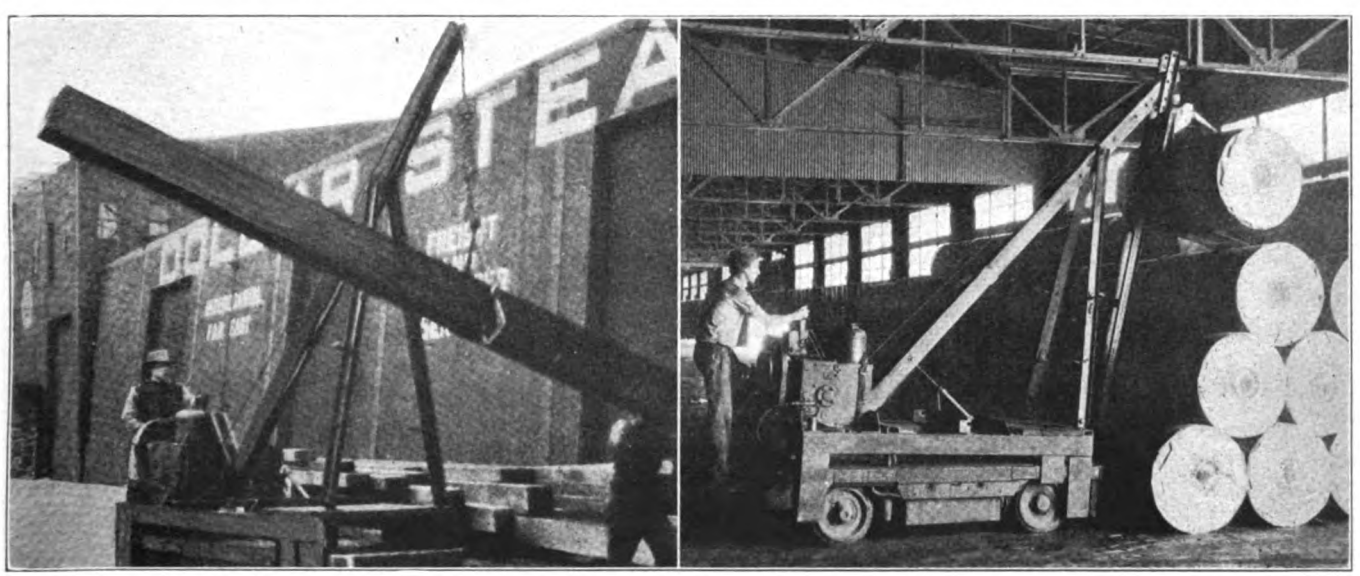
Attachment to Crane Permits Bale Handling

handling of each separate package at each end of the lighter movement.

Someone who has the proper inspiration could make a fascinating study as to how various commodities in foreign commerce happened to become standardized in the various odd sizes, shapes and weights of packages for each article. But more important would be a study by the United States department of commerce as to the possibility of recommending changes in the packages. Consider plantation rubber from the East Indies. This huge commerce has developed within the last few years. The material is so valuable that each package is checked and rechecked. There might be as many as 100 separate clerical transactions in the history of any case of rubber from the time it obtains its identity to the time its existance ends in an Akron rubber mill. Why did it happen to be a nearly cubical package with six faces, any one of which might contain the elusive identification mark? The weight, around 220 pounds, is heavy for Malay physique and is too light for effective machine operation. If rubber were packed in packages of 1000 pounds, or even 2000 pounds, sorting would be simplified, since power equipment could readily take each package to its proper pile and quickly stack it as high as desired. Larger packages would automatically reduce not only the danger of theft, but in the ratio in which the packages are made larger, reduce clerical work, weighing, sampling, etc.

Equipment Makes Handling Easy

How did it happen that, in this same East Indian territory, burlap has long been shipped in large bales weighing from 1000 to 1500 pounds? A package of this kind is large enough to be economically handled by machinery carrying one package at a time directly from shipside and tiering on pier 12 feet high with negligible cost for the tiering. Burlap was formerly one of the difficult kinds of freight to handle because the longshoremen complained of the weight of the packages. They could not tier the bales high because it was impossible to get enough men around any bale to elevate it. Today, with machinery, burlap bales are ideal freight to handle and the handling cost per ton is lower than for almost any other commodity. Another good type of package for mechanical handling on piers is newsprint paper in 6-foot rolls weighing about 1300 pounds each. By special attachments on electric trucks this paper has been handled from ship side at the rate of from 40 to 50 rolls per hour, per



Large Timbers Can Be Handled Easily by Mechanical Equipment and Newsprint Paper Can Readily Be Handled

truck, sorted and stacked four rolls high on the flat, without a human hand touching the paper after landing on the pier.

Customs weighing of imported cargo by the United States government employes has long been by antiquated methods with great expense and delay. If mechanical equipment is used there are many possibilities for moving the freight over scales in the course of the regular operations, thus eliminating rehandling and consequent delay to valuable freight. It is only within the last year that sugar going into public warehouses in the port of New York has been weighed in 3-ton lots by running electric trucks over the scales. The amount of sugar stored in New York alone may be 200,000 tons in a season. The engineering side of weighing is not difficult. It is chiefly a matter of organization to apply the engineering principles.

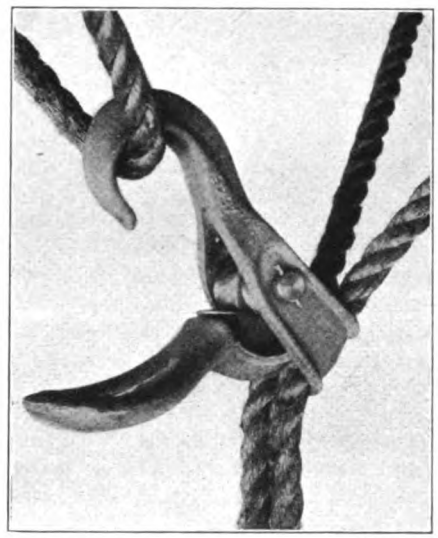
Better design of ships from a cargo standpoint may result in making many ships almost obsolete within the next few years. The problem has been so little studied that it is impossible to foretell the nature of the changes. Whatever they may be, however, it is pretty safe to predict that they will be revolutionary.

The new CALIFORNIA of the Panama Pacific line, the biggest merchant ship built in American yards, has numerous side ports large enough to take a sedan car. Electric trucks can be run through these side ports without any objection from the underwriters who might not allow gasoline equipment. A side-port ship having large hatches might be equipped with elevators, so electric trucks can take the package freight directly to the proper part of any deck of the ship for stowage. This obviates the necessity for placing freight in slings just to get from one deck level to another. It might be desirable to have an elevator cover only half of the hatch area and use a hoist mechanism for the other half, so that the elevator hatchway itself may be filled with freight after all other portions of the ship are stowed.

Miscellaneous Grain Loading

Much bulk grain is loaded while ships are at general-cargo piers. Trimming the grain has been an expensive and time-consuming operation. Mechanical equipment for trimming grain in ships is now available and should be more generally used. Again it is a matter of organization, because of the divided responsibility between the grain elevator crews, the shipowner, and the contracting stevedores. Grain is often handled in tramp steamers and the ships' agents seldom understand the possibilities of mechanical trimming.

Ships in foreign trade are on such long runs that they cannot be operated on any schedule which will keep the terminals continuously busy. Ships will bunch at the terminals no matter how carefully they are timed, and there are sure to be days or even whole weeks without any ships whatever at a given pier. Even the largest shipping companies would hesitate to purchase enough mechanical equipment to load or discharge all their ships that might be in port simultaneously. They could perhaps provide for their minimum or even their average requirements, but not the maximum. Then, too, it is not only a question of investment in equipment but of having enough highly skilled operators available when necessary. The effective operation of marine-freight-handling equipment requires men of a quite unusual type. Unless these men are given sufficient continuous work they will drift away to other industries.



New Hook and Holder—Cannot Slip

Commercial stevedores are paid on a tonnage basis and it would be supposed that they would have the incentive to develop or buy the best machines for handling marine freight. Stevedores have, however, been at a disadvantage in that they have usually had too little certainty of continuing the business with any single ship owner. It has been too big a risk for them to invest in sufficient mechanical equipment to do work on an all-machinery basis.

The best thing that can happen to a ship owner's bank account is the elimination of the hand truck from his piers. There seems to be no likelihood of sufficient mechanical equipment at steamship terminals to banish the hand truck except by a rental service. Versatile mechanical equipment must be mobilized in sufficient quantity at any pier as needed. This requires rented freight-handling machinery with professional skilled operators.

Much Gear Poorly Designed

Much of the miscellaneous gear used by steamship lines or by contracting stevedores is unfortunately not of the best design for the purpose and therein lies opportunity for men with engineering training. The average longshoreman can not be expected to select the one best method for the various kinds of freight which change every few minutes during a working hour. When power trucks instead of hand trucks are used on a pier the truck operators can be of tremendous value by using their greater mechanical experience to guide all the other men in the gang. When the hand truck is eliminated old habits of work disappear and there is a zest in the job which creates new performance records without conscious effort on the part of the men most intimately involved.

Mechanical freight handling equipment should move at speeds three to five times that of hand trucks. Usually first installations of machinery on steamship piers use the power equipment on only one or two hatches of the ship. If the other hatches are worked by hand trucks, power equipment can travel no faster than the hand truckers using the same aisles. Mixing the methods is unnecessarily dangerous for the hand-truck pushers and it does not give fair comparison with the machine methods. Until all pier operations are done by machinery without any hand trucks to get in the way and slow up operations, full economies will not be realized.

Overtime wages at 50 per cent increase are watched most carefully in the offices of ship operators. Not only does the cost per ton go up because of overtime wage rate, but there is a decrease in the tonnage due to the men becoming tired from long hours of work. Machinery does not get tired and can work a high efficiency all night. There is an advantage in working many of the busy terminals at night because at night there is freedom from the congestion of motor trucks, taxi cabs, etc. Few ship owners realize that power trucks on the pier need cost no more for night operation than for day operation. Although the truck operator may get an extra 50 per cent wage rate at night, the reduction of overhead charges on mechanical equipment offsets the overtime wages. As far as the pier operations are

concerned, a look into the future seems to indicate regularly working all around the clock. Ships are getting so much larger and more expensive that quicker turn arounds are sure to be demanded. A ship is active all of the 24 hours when it is at sea, why should it waste so much time in port?

Improve Ship's Cargo Facilities

Until recently, operations on steamship piers rather than inside the ship have determined the speed of loading or discharging cargo. This has been due chiefly to the assembling and disassembling of cargo drafts immediately at the side of the ship. Where mechanical equipment is used to bring full drafts to the side of the ship and take them away from the ship side the whole pier operation is changed. Mechanical equipment on the pier throws the weak spot of cargo handling to the inside of the ship itself. Stowage of miscellaneous cargo is at best highly complicated and every possible attention should now be given to this phase of the work. The naval architect will be needed to assist in transforming ships so that the cargo inside the ship can be handled with more dispatch and less muscle.

Ship terminals have mostly been designed by the civil engineer whose chief thought has been the underwater construction. The upper portion of the pier, which affects all of the cargo handling, has received relatively little attention. All concrete and steel design for the freight section of any pier should be planned around the mechanical engineering features. It is practically impossible to properly fit the mechanical engineering into the civil engineering after the terminal is completed. Take, for example, the matter of elevators for two-story piers. These elevators are seldom large enough and they are often so spaced as to cause unnecessary congestion in freight handling. In ports where lighters are used, piers should be equipped with ramps to permit running electric trucks on and off lighters. Proper location of such ramps requires in itself very nice study. Many piers are built with outside aprons so narrow that throughout the whole lifetime of that pier there will be unnecessary labor and delay for freight handling and excessive damage to cargo.

The use of mechanical equipment at steamship terminals permits taking the freight any reasonable distance without increasing in cost. There is nothing to prevent piers being made 600 feet or more wide. Also, power equipment permits carrying freight immediately away from ship side for storage in any nearby area. In New York City, 5000-ton cargoes of Holland or Belgian brick are regularly transported and piled in spaces perhaps one-quarter of a mile away from the pier berth. Also, cargoes of Spanish olives in barrels or hogsheads are regularly sorted over several acres of sand fill adjoining the pier. From an engineering standpoint, it is perfectly feasible to take large lots of cargo directly from the ship to any floor of nearby city warehouses. Thus if ships have large side ports and elevators, Pacific coast canned goods can regularly be moved directly from any portion of any ship deck to any part of a nearby wholesale warehouse.

Reduce Mixing of Cargo

The same ships and the same men in the crews are involved in each of a ship's run. This is entirely different from railroad operation. It should not be so difficult to get freight put into a ship at one end so as to get it out of the ship properly at the other end. Coolie labor is low in cost, but expensive for supervision. Use of mechanical equipment in tropical ports is often justified on the ground that less mixing of cargo gives a large saving at the American ports.

Longshoremen in this country cannot be expected to do the heavy cargo handling work that they did in former years. As the saying on the Atlantic coast goes, "In the old days we had wooden ships and iron men, now we have iron ships and wooden men." It is up to the ship owners to change the working conditions. A contracting stevedore cannot do it alone, because he has no control over the loading of cargoes in ports other than the one in which he is the contractor.

The high accident rate and great insurance expense should be sufficient to get the ship owner's attention. It has been proved on the Pacific coast that most marine accidents can be eliminated by competent engineering study. Accident prevention work alone is sufficient justification for more engineering-minded men at ship terminals. The use of more machinery and less hand labor is definitely known to reduce accidents. Reduction of accidents automatically gives better economic cost.

Men properly qualified to make improvements in ship-terminal operation do not exist in any great number. The question of getting results is, therefore, a very real one. Perhaps the easiest way to make a beginning would be to have carefully picked men put in training for this work and serve first on a purely staff basis, reporting directly to the general manager. In this way there would be no upsetting of the authority of the pier organization responsible for turning the ship around in the least time and at the lowest cost. These special men should be given every possible encouragement from the top officials of the organization. They will need it, and, unless they get it, they may leave the shipping field and set back the whole effort to an entirely new beginning. Unfortunately there are too few general managers who themselves understand the terminal problem sufficiently well to advise and back up these selected men during the period necessary for them to become familiar with all phases of the work.

Connection with the general manager's office is suggested primarily because only at the top are there any cost or statistical figures available to stimulate imagination and spur one on to making further studies. No two cargoes are alike and the business may change entirely at different seasons of the year. A rough and ready ability to think in terms of statistics is desirable. A beginner should be warned, however, against trying to prove too much by cost figures or even the simplest motion studies. The operations are usually so crude that the problem becomes primarily one of judgment and ingenuity. A valuable process for quick test purposes lies in comparing two methods by balancing one against the other, factor by factor, and quickly ascertaining which method has one or more predominating advantages. After some experimenting, the investigator will gain confidence in his own judgment and know almost instinctively when a freight-handling operation is moving properly without using a stop watch or other timing methods.

Marine-terminal work is more than usually interesting and there should be no difficulty in getting the right type of men to enter the field if they are assured proper co-operation and support. There is a need for more men who speak the language, which need not necessarily be profane.

Lake Captain Dies

Capt. William A. Williams who sailed the Great Lakes for nearly fifty years died, Sept. 11. When he retired from active service five years ago he was the second oldest captain on the lakes. He served with Pickands, Mather & Co. and his last command was the SAMUEL MATHER of this company's fleet.

Captain Williams was widely acquainted in lake shipping circles.

Equipment Used Afloat, Ashore

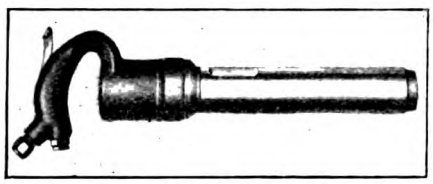
Riveting Hammer—Double Pass Air Filter—Warning Relay—Simple Regulator—Cable Clip—Compressor-Tractor Unit—Welding Torch—New Hoist

A NEW line of riveting hammers in four sizes, having strokes of five, six, eight and nine inches, has been developed by the Ingersoll-Rand Co., 11 Broadway, New York City.

The new hammers are said to be high in power, easy to operate, and low in air consumption. They have several improved features of construction which insure reliable and economical service.

An important feature is the manner in which the handle is fastened to the barrel and kept tightly in place by a spring locking device. The handle is threaded on to the barrel and the spring lock not only prevents the handle from unscrewing but applies tension to automatically tighten it.

The valve operates in a hardened and ground valve box located at the



NEW TYPE RIVETING HAMMER

head of the barrel and clamped in place by the handle. The valve is exceptionally strong and durable, having large bearing surfaces and being free from any holes or ports from which cracks could start.

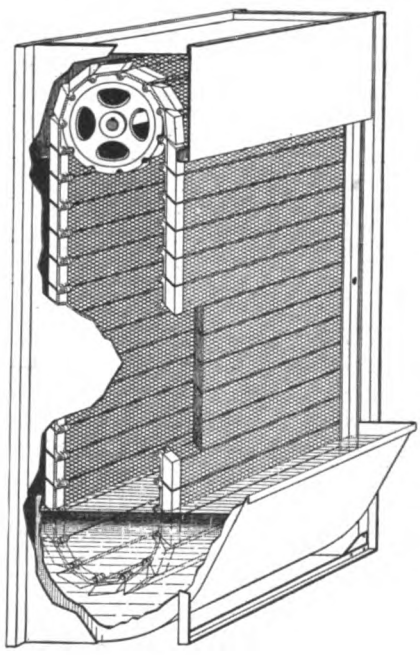
The valve box, which houses the valve, has a solid upper end which provides a positive compression chamber for the piston on its up stroke. It always acts to prevent the piston from striking the handle end as this air cushion is not dependent upon an air-tight joint between the handle and the barrel.

The barrel of the hammer is made of special steel, heat treated and ground to exact dimensions.

An open type outside trigger handle is furnished as standard; but closed or inverted type handles can also be supplied.

Double Pass Air Filter Is Self-Cleansing

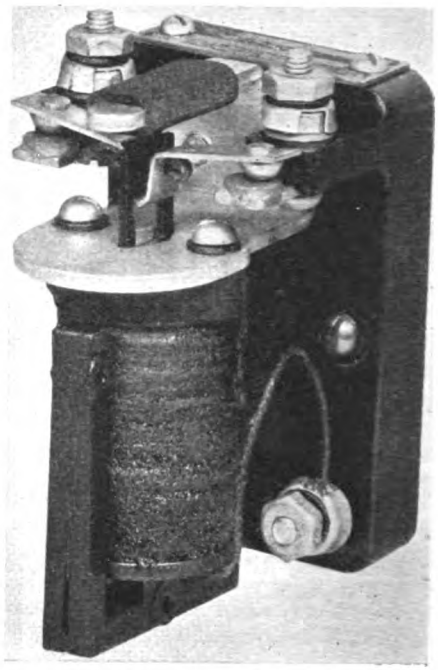
As a recent introduction into the field of ventilating systems, a new model double-pass air filter has been brought out by the National Air Filter Co., Chicago. The real filtering medium, shown in the accompanying illustration, is the endless-curtain type with small units of multiple layers of woven copper ribbon and expanded metal passing over large supporting wheels at the top and through an oil cleaning bath at the bottom. This arrangement presents two walls through which air must pass, each being a filter. The whole curtain is encased in a sheet metal frame, 28 inches wide, 18 inches deep, and in various heights, depending upon the openings desired. Air entering through the first wall is accelerated due to the small openings in the filtering medium and meets the freshly oiled surfaces of the screen. Oil entrainment is claimed to be prevented, for the velocity of the air is lessened in the 10-inch gap between the two curtains, and any oil particles that may be carried along are dropped at the lowered velocity. Emersion in the oil reservoir cleans the filter since the dirt rests on a film of oil and is dislodged in the oil bath. As the dirt accumulates a sludge is formed which can be scraped out without disturbing the oil, this being necessary once or twice a year. Operation of the filter requires a few turns of the top roller each week. The device is built in sections which are interchangeable and can be used in multiple for large installations.



DOUBLE PASS AIR FILTER

Relay Warns When Power Fails on a Circuit

A new signal relay has been designed for application where a small, inexpensive device is needed to actuate a warning signal when power fails or voltage drops on an important circuit. The device has been developed by the General Electric Co.



WARNING RELAY FOR DIRECT OR ALTERNATING CURRENT

In operation, the coil circuit of the relay is connected across the two legs of the power supply which it is desired to watch. When the coil is thus energized, the relay contacts are held in an open position. By connecting a circuit through the contacts to a bell, horn, light or other signaling device, warning will be given when power fails or voltage drops, as in that event the coil will be de-energized, the contacts will close and the circuit to the warning signal will be completed. The relay can be used on either direct or alternating current.

The relay is of the solenoid type, having a laminated armature of three

sections, the central leg of which is fastened to a bakelite operating arm which raises and lowers the contact tips. The entire device is mounted on a molded compound base, only 1⅞ inches wide and 2½ inches high, and is packed in a small cardboard carton together with a small, enameled tube resister the rating of which varies according to the voltage and frequency of the application. The relay can also be supplied for panel mounting.

When used as a voltage drop warning device, adjustment to the proper operating voltages is made by means of an adjustable brass screw protruding into the air gap, over the outside leg of the armature. Thus a very fine adjustment of pick-up and drop-out may be obtained. In actual tests, the relay was made to drop out at 106 volts, after picking up at 112 volts, or at 95 per cent of the pick-up voltage, and held this ratio over a considerable range.

A typical application of the relay is on storage battery and other generating outfits. When the battery falls below the critical voltage, the relay places it on charge or increases the charging rate, and disconnects it when the voltage has come back to its full value.

New Cable Clip Has Two Fully Grooved Jaws

As a part of the equipment of shipyards, docks and shipbuilding companies, a cable clip with a considerably larger holding surface has been put into production, in a full range of sizes, by the Eureka Metal Products corporation of North East, Pa. It is a patented clip which, according to tests, has shown its ability to carry three times the maximum load of an ordinary clip and gives equally good results both on wire rope and messenger strand.

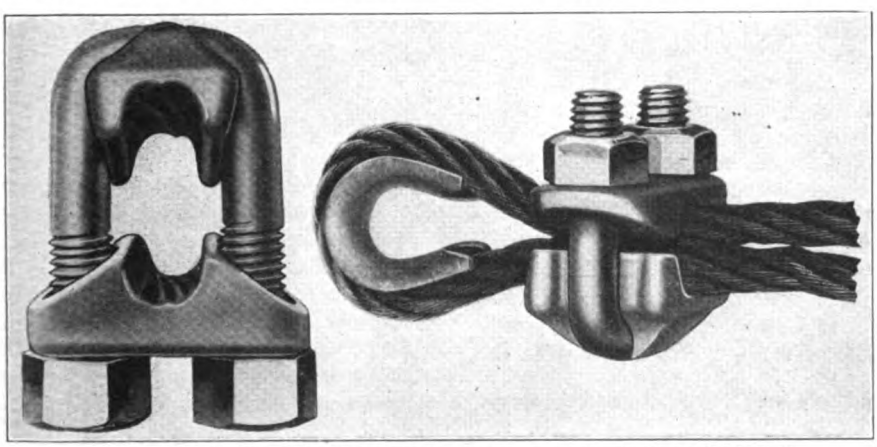
Besides giving a larger holding surface, this new clip saves cable—there is no distortion of cable whatever. The large surfaces of both the top and bottom plates are grooved for the lay of the cable, so that neither of the cables is gripped by the U-bolt. The construction of this clip is extremely rugged, and it has only four parts, just the same as the ordinary type of cable clip. The clip's extra grooved jaw is peened to the "U."

An examination of the improved clip makes it easy to understand why users of cable are showing a special interest in the extra margin of safety provided by this clip. According to the manufacturers, it gives triple safety because of its triple grip upon the cable. This is perhaps the most important feature from the standpoint of most users, especially structural erectors, with whom "safety first" is always a prime consideration.

But another feature that users have found almost equally important, is the fact that any size wrench can be used to tighten the clip. There is no chance whatever of injury to the cable, regardless of the size wrench that is used—no restriction on the length of wrench handle necessary. This clip's double grooved surface prevents any distortion of the cable, no matter how tight the nuts are pulled down. And there is no restriction on the way in which these clips are placed on the cable—it doesn't matter which way the U-bolt is turned. The clips can be staggered on the cable, or placed with the U-bolts all in the same direction. There are no "circle bends" in the cable from the clips, and the U can be placed over the live cable with just as good results as when turned the other way.

The double grooved surface forms a perfect loop—perfectly symmetrical, with equal flexibility on both sides. The stresses on the cable are equalized under heavy loads. Savings reported, through use of this new patented clip, include a very considerable saving in cable because there is no cutting of the strands by U-bolts. The scored surfaces cannot injure the cable, no matter how tight the clip is pulled up. There is also a direct saving in clip cost, and a very considerable saving in labor, because fewer clips are needed.

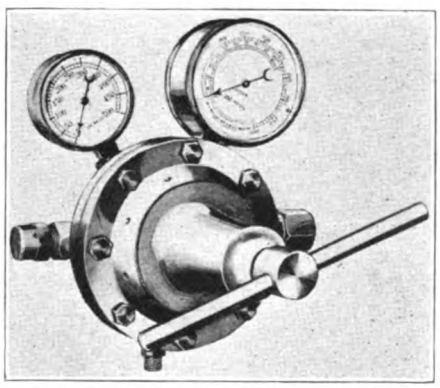
These patented clips are made in all sizes of steel or bronze, and are sold by the manufacturer with an absolute guarantee of satisfaction to the user. Small trial orders are accepted, and a descriptive folder can be obtained by writing the Eureka Metal Products Corp., North East, Pa.



THIS PATENTED CLIP OF ONLY FOUR PARTS IS STURDILY MADE

Regulator of Simple and Rugged Construction

A new type regulator suitable for use in the marine field has been brought out by the Alexander Milburn Co., Baltimore. This regulator



PRESSURE REDUCING REGULATOR

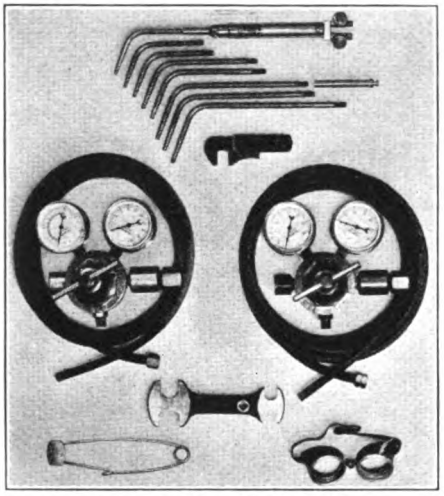
is designed for use in the reduction of varying gas pressures for welding and cutting.

It is built to supply the demand for a regulator for use in operations where a large volume of gas or a great number of outlets are to be controlled. The bonnet, as shown in the accompanying illustration, is of bolted construction equipped with a safety blow-off valve. The diaphragm, made of a special resilient and corrosion-resistant bronze extends to the outer circumference of the bonnet. The initial gage registers up to 3000 pounds, the delivery gage has a 500-pound range. The regulator spring closes the seat with, not against, the pressure, thereby permitting the seating to be effected by a sealing pressure of several pounds instead of hundreds of pounds, lessening the chance of damage to the seat. The main operating parts comprise only the pin, nozzle, and seat-carrying sleeve and are said to be easily accessible for examination, cleaning or removal.

Welding Torch Is Built in Lighter Size

A new welding torch for thin metal welding has been produced by the Air Reduction Sales Co., New York City. This torch is suitable for welding tanks, containers, steel doors, metal finishings and sheet metal constructions in general.

The torch is identical in design with the previous models of the same manufacturer, but is smaller and lighter. The makers claim for it a range from 1/32-inch sheet steel to 1-inch steel plate, a range well within the requirements of average welding operations, including the joining of steam, water and gas pipes. Mixing efficiency is said to be high, with a ratio of about 1.01 volume of oxygen to 1 acetylene. The torch, fitted with standard hose connections



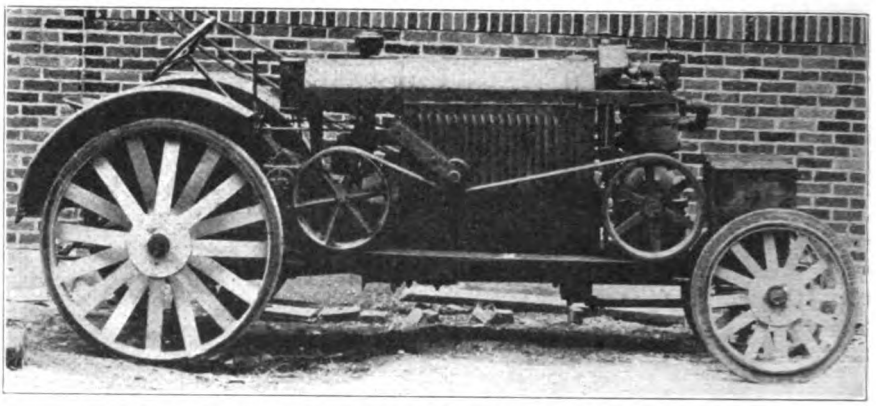
LIGHT WELDING TORCH

for 3/16-inch inside diameter hose and needle valves, weighs 14 ounces and is 14 inches in length. The torch is offered singly or, as shown in the accompanying illustration, in an outfit comprising oxygen and acetylene regulators, each with high and low-pressure gages, an assortment of tips, two lengths of hose, and other equipment.

Compressor and Tractor Compose New Unit

A self-propelling, four-wheel air compressor designed for use around piers, shipyards and docks for operations which require a machine capable of handling heavy loads and of moving under its own power has been placed on the market by the Pontiac Tractor Co., Pontiac, Mich.

The unit has air compressor, air tank and tool box mounted on a frame which attaches to a tractor of either the McCormick-Deering or Fordson types, as shown in the accompanying illustration. The compressor, manufactured by the Wall Pump & Compressor Co., Quincy, Ill., has 124 cubic feet displacement with a separate radiator having pump-driven circulation. The separate radiator arrangement is said to hold the air from the compressor at a lower temperature than the motive-power radiator could. The compressor has a three-bearing crankshaft and force feed lubrication. Power to drive the compressor is furnished by the tractor through a power take-off pulley which is equipped with a clutch permitting the pulley to be thrown into or out of gear as desired. The motion of the belt is claimed to bring the belt tightener into correct relation with the belt.



COMPRESSOR-TRACTOR UNIT SHOWING COMPRESSOR DRIVE BELT

Equips Blowers with New Types of Bearings

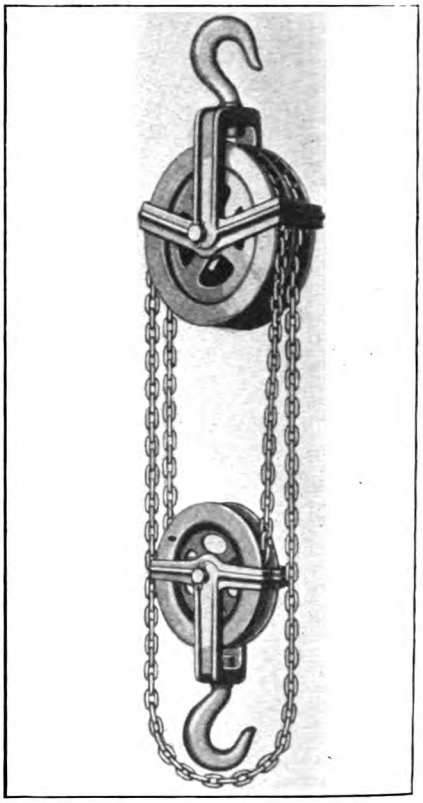
The ball and roller bearing principle has been incorporated recently into the design of a new line of blowing equipment produced by the P. H. & F. M. Roots Co., Connersville, Ind.

The larger model blowers are furnished with heavy-duty roller bearings and the smaller units with roller or ball bearings depending upon specifications. The bearings are said to be well-lubricated, ample space being allowed around the bearing for a sufficient supply of lubricant and provision being made for forcing the lubricant through the bearing from one side to the other. The use of the new bearing design on the blowers is said to offer new possibilities for direct connection to small motors with less horsepower to obtain increased capacity, operation with higher efficiency by permitting the use of more closely fitting cases and the obtaining of greater capacities with conservative speeds.

On Aug. 1, Joseph D. Phillips, traffic manager for foreign service of A. H. Bull & Co., New York, died at his home in Plainfield, N. J.

Differential Hoist Has Heavy Load Sheaves

A new direct differential hoist suitable for use around piers and shipyards requiring the use of lifting apparatus as an essential part of their equipment has been brought out by the Chisholm-Moore Hoist Corp. division of Columbus, McKinnon Chain Co., Cleveland.



THE HOIST IS MADE IN CAPACITIES FROM ¼ TO 3 TONS

This hoist is equipped with an electric welded load chain and has extra heavy load sheaves, malleable iron yokes and a drop forged hook. The hoist is made in capacities ranging from ¼ to 3 tons. The ¼-ton hoist has a lift of 6 feet and the 3-ton hoist has a maximum lift of 10 feet. A view of the hoist is shown in the accompanying illustration.

Personal Sketches of Marine Men

Clarence W. Wiley, Chairman of the Board, Todd Dry Docks Inc.

By Robert C. Hill

FOR many years he has had a remarkably active career in ship operation, shipbuilding and ship repairing, and now heads the most important ship repair yard in the Northwest.

RESPONSIBILITY in management came to him at an early age and his experience in each difficult task has been of great value as an executive in the important work under his charge.

BORN in Massachusetts, and throughout his life connected with maritime affairs, it is but natural that he should be an enthusiastic yachtsman. The waters of Puget sound are ideal for this sport.

SELDOM does a man rise to distinction both in steamship operation and ship construction but such is the record of Clarence W. Wiley, chairman of the board of Todd Dry Docks, Inc., Seattle. For more than a quarter of a century Mr. Wiley has been closely identified with the shipping interests of the North Pacific after having made a name for himself in shipping circles of the North Atlantic.

Of the many shipbuilders who constructed deep sea tonnage for private owners and the government before and during the World war, Mr. Wiley is the only one still active in the Northwest. As the ranking official of Todd Dry Docks, Inc., he has established one of the finest repair yards in the country at Seattle and furthermore he is keeping it busy. It is an indispensable adjunct of the great commercial fleets which come to Puget sound to load cargoes for all parts of the world.

Born in Massachusetts, Mr. Wiley at an early age inhaled the atmosphere of salt water and it was natural that he should turn his attention to the deep sea. Consequently at 17 he became an employe of the Robinson Boiler Works at Boston. Ambitious for further education he enrolled in the public night schools of that city specializing in drafting. While working during the day in the boiler plant he completed the full drafting course. He then entered the office of the chief engineer of the Boston Tow Boat Co. one of the largest maritime companies on the east coast. Within five years he was promoted to the position of superintendent of engineering for the company, a responsible berth for a man of 24.

Within four years he was appointed consulting engineer for the Boston & Philadelphia Steamship Co., operating in the coastwise trade, and he was also appointed superintendent of the Boston Steamship Co. He continued to retain his position as superintendent of engineering for the Boston Tow Boat Co. Thus at the age of 28, he had unusual responsibilities.

Deciding to build larger vessels, the Boston Tow Boat Co. commissioned Mr. Wiley to design three freighters of 5500 tons deadweight each and under his supervision the steel steamers LYRA, HYADES and PLEIADES were constructed. Following this he performed a similar service for the Boston Steamship Co. in designing and supervising the construction of the 12,000-ton deadweight, steel, twin screw steamers SHAWMUT and TREMONT.

In 1902 the Boston owner sent these five steamers to the North Pacific and entered the trade between Puget sound, Japan, China and the Philippines. Mr. Wiley came to the Pacific at that time and has since been actively engaged in shipping here. As marine superintendent for the fleet of five American steamers, he operated them successfully until 1910 when the company withdrew from the transpacific trade and the vessels were sold.

He next became associated with the Alaska-Pacific Steamship Co. and the Alaska Coast Co. operating between California, Puget sound and Alaska. These companies were later merged into the Admiral line of the Pacific Steamship Co. For four years Mr. Wiley managed these services with marked success. The business increased and a number of vessels were added to the fleets.

Following his resignation from this position, Mr. Wiley was selected by the Hill interests to manage its steamship operations on the Pacific coast. This position placed him in charge of the giant steamship MINNESOTA, operating across the Pacific at that time, and the express

liners GREAT NORTHERN and NORTHERN PACIFIC, built especially for fast passenger service between the Columbia river and California. The GREAT NORTHERN is now the H. F. ALEXANDER operating between Seattle and California ports.

When William H. Todd, known through the country for his operations as a shipbuilder and owner of repair yards, purchased the Seattle Construction & Dry Dock Co. at Seattle, in 1916, he appointed Mr. Wiley president and general manager. Then followed a busy period during which the Seattle yard completed several submarines, the steamer WALTER A. LUCKENBACH and a number of cargo vessels for both the government and private owners. On June 1, 1918, the yard was sold to the Emergency Fleet Corp.

At this time Todd Dry Docks, Inc. was organized and a suitable site was purchased on Harbor island, Seattle. To the new location were moved the company's drydocks and a new plant was built. Under his direction the new yard was placed in operation within four months from the time the former plant was sold.

In the fall of 1918, the Todd interests decided to establish a steel shipbuilding plant on Puget sound. A site on the Tacoma tide flats was purchased and the Todd Dry Dock & Construction Co. was organized. Under Mr. Wiley's supervision the work was carried on quickly and efficiently. When the property was bought it was under 18 feet of water. It was a herculean task to prepare it for the ways, shops and buildings but the result was one of the best planned and most efficient yards in the country. Here were built a fleet of cargo steamers and also three fast scout cruisers for the United States navy.

Surrounded by able executives, Mr. Wiley, as chairman of the board, is successfully guiding the destinies of Todd Dry Docks, Inc., which is known throughout the world as one of the best equipped and most efficient ship repair yards in any port. The plant's equipment includes three drydocks, one of 15,000 tons capacity, one of 12,000 tons and the third for smaller vessels. The yard is kept constantly busy and has been successful in bidding for many large repair jobs, with competing firms in California and British Columbia. One of its recent feats was obtaining an $800,000 reconditioning job on the steamship COMFORT, renamed the HAVANA, in competition with California yards, the vessel being converted from a navy hospital ship to a modern passenger and freight liner for the Ward line. Many other notable jobs have been successfully done at this shipyard.

Mr. Wiley believes in hard work and this belief has been exemplified during his active career at Seattle. While his duties have not permitted him to give as much time to civic affairs as he would like, he has always been active in seeking to build up the industries and commerce of Puget sound. He has a host of friends who recognize him as one of the Pacific's big men with a record of real accomplishment. Mr. Wiley's hobby is yachting. He owns one of the finest pleasure cruisers in these waters and enjoys cruising through the beautiful waters of Puget sound, British Columbia and Alaska.

To Build Two Fast Turbine Passenger Liners

On Sept. 5 the postoffice department stated that the New York and Cuba Mail Steamship Co., New York city and familiarly known as the Ward line has been awarded the contract for carrying the mail between New York and Havana. The contract calls for reimbursement on the basis of vessels in classes 4, 3 and 2 respectively $6, $8 and $10 per nautical mile.

Shortly after the award of the contract, Franklin D. Mooney, president of the Atlantic Gulf & West Indies Steamship lines, a subsidiary of which the Ward line is the most important, announced definitely that the company is all prepared with plans and specifications by Theodore Ferris to ask bids on two new passenger steamers for the New York-Havana service, the speed to be in excess of 18 knots. With its contract to carry mail from New York to Vera Cruz it is estimated that the company will receive in all about $800,000 a year.

Mr. Mooney said: "In view of the award of these two contracts we are going to carry out one of the essential features of the Jones-White bill by ordering the construction of new ships." The new vessels are to be 508 feet in length overall and 69 feet 8 inches in beam and of 26 feet loaded draft. The displacement will be 15,750 tons, gross tonnage, 11,300 and net tonnage, 5700. The power plant in each vessel will be single reduction turbines applied to twin screws and developing a total of over 12,000 horsepower giving a speed in excess of 18 knots. There will be accommodations for 378 first class, 90 second class passengers and a crew of 200. Every known device for safety of life and property will be built into these very fine projected ships. Full use will undoubtedly be made of the provisions of the Jones-White bill in borrowing 75 per cent of the cost of construction of the new vessels. This very definite statement by Mr. Mooney and many other more or less confirmed projects by other companies clearly shows that the Jones-White bill has begun to make its beneficial effects felt and the future looks more promising than ever before since the beginning of the decline of our merchant marine for the upbuilding of a solid efficient, American flag marine in American shipyards. The beginning of it is here. It is bound to continue.

Plans for a new electric car dumper, expected to set a new record for speed, have been completed by the Toledo & Ohio Central railroad. The new dumper will be built by Heyl & Patterson and is expected to be completed in March, 1929. It will be located at Toledo.

Matson Line to Build Two Large Liners

There have been a number of reports concerning the plans of the Matson Navigation Co. to build two new high-speed passenger liners for the service from San Francisco to Australia. It is now understood that bids will soon be called. If the first reports are correct these ships will be by far the largest and most elaborate ever built in the United States. These plans call for vessels of a minimum speed of 20 knots, 720 feet long, of 25,000 gross tons and to cost approximately $10,000,000 each. Since the MALOLO, a vessel of over 21 knots, 582 feet in length overall and very elaborately fitted out in every respect cost $7,500,000 to build, it is not out of line to say that each of the two new ships projected may cost as high as $10,000,000. This is another very important direct result of the Jones-White bill as of course both the mail contract and construction loan provision of this bill will be taken advantage of.

The Mississippi river commission placed contracts several weeks ago amounting to $1,000,000 for ninety-three steel barges to be used as river equipment. These barges will require about 10,700 tons of steel plates and shapes. The American Bridge Co. has 30 under way, Riter Conley, 31, and Dravo company, 22.

Late Decisions in Maritime Law

Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review
By Harry Bowne Skillman
Attorney at Law

IF THE owner of a damaged vessel puts her in dry dock to repair damages done by a collision, and while she is there seizes the opportunity to make other repairs, which do not extend the time consumed in the collision repairs, the tort-feasor, according to Clyde Steamship Co. v. City of New York, 20 F. (2d) 381, may not abate his damages. In such a case the tort-feasor cannot truly say that the detention and therefore the loss would have been less, had the owner deferred his own repairs. The ship by hypothesis had in any event to be taken out of commission, and must have lost her earnings during all the period she was laid off. It is that loss and that alone which is the basis of detention damage. It must be treated as a matter of indifference to the tort-feasor that the owner gets an incidental benefit from the detention. He has as much lost the use of his vessel as though he did not make his own repairs, and he is not under any duty to share his windfall with the tort-feasor. But, said the court, if the ship would in any event go out of commission, collision or no collision, and if therefore, during the period when the collision repairs are actually made, she would have earned no profits for her owner, he cannot be said to have been damaged. The collision has not deprived him of earnings which he would have made at that season.

* * *

THE general rule is that the measure of damages for a carrier's negligent delay in the delivery of goods is the diminution in the market value of the goods between the time they ought to have been delivered and the time they were in fact delivered. Special damages for such delay are not recoverable, unless the carrier had knowledge or notice of the special use to which the goods were to be put.—United States shipping board v. Florida G. & E. Co., 20 F. (2d) 583.

* * *

A MORTGAGE, as generally understood, has no maritime incidents, and therefore is not a matter for admiralty jurisdiction, nor is it brought within such jurisdiction by the mere fact that it happens to be placed on a ship. However, under the Ship Mortgage act of June 5, 1920, a mortgage complying with the terms of that act is affected with maritime incidents and given priority as expressly provided therein; that is, the mortgage becomes a preferred one, and is subject to admiralty and maritime jurisdiction, entitling it to priority over all claims except preferred maritime liens, and expenses and fees allowed and costs taxed by the court.—OCEAN VIEW, 21 F. (2d) 875.

* * *

THE fact that a seaman was absent without leave when the voyage terminated and other members of the crew were paid off was sufficient cause for not paying him immediately when he appeared the next day after the paymaster had gone, and he was not entitled to double pay during the delay necessary to notify the owner and obtain the money. However, a tender of wages due on condition that the seaman accept same in full settlement was unwarranted, and the seaman was entitled to recover double wages from the time of tender to the date of decree.—LAKE GALEWOOD, 21 F. (2d) 987.

* * *

ONE who advances money to discharge liens gets a lien of equal dignity with the one discharged, and the existence of a necessity is not a condition precedent. "Necessity," according to the case of MINNIE AND EMMA, 21 F. (2d) 991, refers more properly to the occasion giving rise to the original lien rather than to the occasion for paying it off, and it was held that one who advanced money to pay wages to the crew, who were threatening to libel the vessel at a time when neither he nor the master could get into communication with the owner, was entitled to a maritime lien, and that he is presumed to have relied on the credit of the vessel.

* * *

THE master of an overtaken vessel, receiving no signal from the overtaking vessel, is not required to look astern before changing his course, however abruptly.—ALBEMARLE, 22 F. (2d) 840.

* * *

WHERE hams, apparently destroyed because of their decayed condition, and doubtless known to be subject to condemnation by the board of health, were not seized by the board of health, but were dumped by the consignee, the goods, it was held in Cudahy Packing Co. v. Munson Steamship line, 22 F. (2d) 898, were delivered to and removed by the owner, and a clause of the ocean bill of lading requiring notice of claim before removal, or within 48 hours after removal, applied.

* * *

A GUEST on a motorboat, it was decided in Warnken v. Moody, 22 F. (2d) 960, was not chargeable with negligence for helping the master, a licensed marine engineer, at his request, in supplying the carbureters with gasoline by means of a funnel and rubber tube, the pumps having failed to work, with the result that the gasoline in the tube became ignited and the fire spread to other parts of the vessel. "One who," said the court, "without knowledge of the danger involved, at the instance of another, who reasonably may be supposed to have superior knowledge and adequate skill and prudence, helps the latter to accomplish a desired result, is not chargeable with negligence for so doing."

* * *

WHILE a vessel has a lien on the cargo for ocean freight and demurrage, which lien is not lost by delivery if the vessel expressly retains it, the vessel has no maritime lien for demurrage charges paid to a railroad company for use of cars into which the cargo was unloaded, and such nonmaritime claim cannot be changed into a maritime lien by agreement of the parties in the bill of lading, so that admiralty court has no jurisdiction of such claim. A railroad normally, in the absence of special arrangement, would have no claim which it could assert against the vessel or her owner, because its rights would lie against the shipper or consignee.—California & Eastern Steamship Co. v. 138,000 feet of lumber, 23 F. (2d) 95.

* * *

A SALVAGE service is a service which is voluntarily rendered to a vessel in need of assistance, and is designed to relieve her from distress or danger, either present or to be reasonably apprehended; and salvage is the reward or compensation allowed by the maritime law for service rendered in saving maritime property, at risk or in distress, by those under no legal obligation to render it, which results in benefit to the property, if eventually saved. Salvage service is to be distinguished from towage service, in that the latter is a service which is rendered for the mere purpose of expediting a vessel's voyage, without reference to any circumstances of danger, although the service in each case may be, and frequently is, rendered in the same way. Aid rendered by three tugs in towing a steamship, valued at $93,000, from her pier, where there was actual apprehension of danger from a burning vessel near by, was held, in the case of EMANUEL STAVROUDIS, 23 F. (2d) 214, to constitute a salvage service, and the tugs were awarded a total of $1700.

Up and Down the Great Lakes

Fruit Handling Increases—Steel Cargo—Lake Levels—Cleveland to New York by Barge Canal—Record Cargo Carried

HANDLING of fruit by Great Lakes boats from the Michigan fruit belt this year is exceeding expectations. The grape crop is much heavier than a year ago, and fruit shipments as a whole exceeded last year by 10 to 15 per cent and closely approximated shipments of the banner year 1926.

Various improvements have been made at lake port terminals for loading and unloading these fruit shipments. Shipments from Benton Harbor and St. Joseph, Mich., led in activity during September, and the receipts at Navy pier, Chicago, have been at a peak rate.

All year daily freight service is being made by the boats of the Goodrich Transit Co., Chicago, to east shore points on Lake Michigan. The service has been extended to many interior towns and cities reached through the lake ports by motor trucks. Other transportation lines have added feeder truck service.

Through the truck service between the lake ports and the interior points, many interior points are given the same service as that enjoyed by cities located on the lake shore.

A fleet of trucks and trailers operates daily between the lake ports and the industrial centers of Kalamazoo and Grand Rapids, Mich. Many intermediate points and points beyond these cities are served by various truck lines operating from Goodrich ports.

Steel Cargo Movement

Shipments of finished steel products between Great Lakes ports was at a high rate in September, shippers taking advantage of favorable shipping conditions in view of the approach of the close of the navigation season. A lower lake steelworks shipper has been maintaining regular weekly schedules from Buffalo to Chicago and Milwaukee, and shipments of steel from the Chicago district to Canadian points have been at a rate slightly above a year ago.

Steel scrap shipments from Detroit to lower lake ports have been in steady volume. The expected movement of scrap by boat from the Chicago district east to Buffalo failed to materialize this season, and an actual scarcity of some grades of scrap in the Chicago district together with the generally higher prices for steel scrap in various districts precluded the development of such scrap shipments late this season.

Shipments of pig iron from Cleveland furnaces to the Chicago-Milwaukee district have ended for this season, it is understood, with a recent shipment to Milwaukee to cover orders placed earlier in the year.

Cargoes of pig iron have been light this year. The average individual cargo shipped has been of 2500 tons, although occasional lots of 3000 and 3500 tons were moved.

August Lake Levels

The United States Lake Survey reports the monthly mean stages of the Great Lakes for the month of August as follows:

Lakes	Feet above mean sea level
Superior	603.02
Michigan	580.50
St. Clair	575.51
Erie	5;2.59
Ontario	246.64

Lake Superior was 0.15 foot higher than in July and it was 0.26 foot higher than the August stage of a year ago. Lakes Michigan-Huron were 0.09 foot higher than in July and they were 1.02 feet higher than the August stage of a year ago, 0.44 foot above the average stage of August of the last ten years. Lake Erie was 0.12 foot lower than in July and it was 0.58 foot higher than the August stage of a year ago. Lake Ontario was 0.09 foot lower than in July and it was 0.87 foot higher than the August stage of a year ago, 0.74 foot above the average stage of August of the last ten years.

Cleveland to New York By Barge Canal

On Sept. 5, a motorship operated by the Erie and St. Lawrence Corp. sailed from Cleveland for New York city with the first cargo of Cleveland manufactured products to move in a self-propelled vessel to the port of New York by water. This first sailing was the beginning of a series of experimental bookings intended to develop the economic feasibility of establishing regular all water movement to the port of New York and to points on the New York State Barge canal.

Additional sailings are to be made from pier 23 at the foot of West Ninth street, Cleveland. The rates include marine insurance; switching and handling charges of Cleveland are absorbed; and deliveries are made within the free lighterage limits of New York harbor including direct deliveries to intercoastal and transatlantic steamship company piers.

At present the fleet of the Erie and St. Lawrence Corp. consists of five steel motorships designed for lake and canal service. They are twin screw diesel engined vessels, 256 feet long, 36 feet in beam with a capacity of 1550 to 1600 tons. The route followed from Cleveland is on Lake Erie, through the Welland canal and Lake Ontario and the New York State Barge canal at Oswego to New York. Arrival in New York city is made six days after clearing from Cleveland.

Eugene L. Falk has been elected vice president of the Great Lakes Transit Co. Mr. Falk was born in Buffalo and has practiced law for the past thirty years. He is connected with the firm of Falk, Phillips, Twelvetrees & Falk.

Record Cargo on Coulby

On Aug. 29, the steamer, HARRY COULBY sailed from Superior, Wis. with 14,178 long or 15,879 short tons of ore. This is the largest cargo ever taken through the Soo river This cargo was delivered at Cleveland. Mr. Coulby and Mr. Samuel Mather of the firm of Pickands Mather & Co., managers of the Interlake Steamship Co. owner of the HARRY COULBY were passengers on the vessel when she carried this record cargo.

The steamer, HARRY COULBY is the largest American vessel on the Great Lakes. She is 630 feet 9 inches in length overall, 65 feet in beam and 33 feet in depth. Her deadweight capacity at 20 feet is 14,000 long tons.

Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties— A Record of Collisions, Wrecks, Fires and Losses

Name	Date	Nature	Place	Damage Resulting
Amerikaland	June 18	Disabled	Balboa	Lost prop.
Anthony O'Boyle	June 18	Fire	Boston	Considerable
Agga	June 16	Aground	Bellmouth	Floated
Angamos	July 6	Struck rock	Santiago	Sank
Alice Laws	June 6	Sank	Blackwell	Floated
Attiki	June 7	Collision	Marseilles	Slight
Antonie	June 20	Gale	No. of Ristna Pt.	Capsized
Attualita	June 22	Collision	Buenos Ayres	Sank
Aysen	June 21	Collision	Valparaiso	Slight
Altamaha	June 28	Aground	New Orleans	Floated
Borongan	June 15	Ashore	Simara Island	Not stated
Bohemian Club	July 2	Struck quay wall	Panama Canal	Slight
Baracoa	June 9	Aground	Gonaives	Floated
Bonneveine	June 13	Ashore	Nr. Fort Liberte	Floated
Braddovey	June 12	Collision	Rosario	Stem
Budapest	June 14	Fire	Alexandria	Slight
Bellis	June 19	Ashore	Hansweerd	Floated
Berk	June 18	Explosion	Swansea	Not stated
Braesyde	June 18	Sank	St. Ives	
Baltic	June 20	Aground	Buenos Ayres	Floated
Buteshire	June 25	Hvy. weather	Perth, W. A.	Leaking
Birger Jarl	June 28	Collision	Aland Sea	Badly
Chas. E. Harwood	June 13	Collision	Nr. Tortugas	Not stated
Coastwise	June 14	Not stated	Portland	Rudder; prop.
Colombia	June 17	Collision	Off San Pedro	Not stated
Cynthiana	June 23	Ashore	Cape Malla	Not stated
Capena	June 24	Explosion	Beaumont, Tex.	Not stated
California	July 4	Aground	London	Bows
Columbian	July 7	Disabled	Panama	Steering gear
Cape La Have	July 7	Collided whf.	Halifax	Jib, boom
Cleanthis	June 3	Disabled	Algiers	Prop. blades
Carnarvonshire	June 5	Struck sub. object	Shanghai	Port tail-shaft
Cengio	June 6	Ashore	Huelva	Floated
Cape of Good Hope	June 7	Ashore	Astoria	Floated—engine
City of Venice	June 11	Disabled	Off Skelmorlie	Engine
Cleopatria	June 13	Disabled	Pernambuco	Boilers
Crackshot	June 19	Struck quay wall	Terneuzen	Prop.
Clapton	June 26	Struck quay wall	Terneuzen	Starboard side
Canada Maru	June 27	Collision	Shimonoseki	Badly
Delaware	June 9	Aground	Argosgrund	Bottom
Delisle	June 26	Collided pier	Baltimore	Bow
Dauntless	July 2	Collision	Halifax	Wrecked
Edward R. Smith	June 23	Collision	Off Barnegat	Port bow
Evangeline	June 28	Collision	Boston	Rails
Eureka No. 94	July 2	Fire	New York	Considerable
Eugenia	July 1	Struck rock	Conanicut Island	Sank
Ena De Larrinaga	June 15	Aground	River Scheldt	Floated
Elena M.	June 17	Aground	Milos	Floated
Etincelle	June 15	Hvy. weather	Nantes	Considerable
Energie	June 29	Ashore	Holmsund	Not stated
Frank C	June 17	Fire	New York	Slight
F. J. Luckenbach	July 3	Disabled	San Francisco	Propeller
Flying Dutchman	June 6	Aground	Battersea Reach	Floated
Ficaria	June 22	Disabled	Esbjerg	Machinery
Farvel	June 28	Stranded	Lat. 57N., long. 9E	Not stated
Grecian	June 28	Collision	Boston	Damaged
Golden Gate	June 25	Struck sub. object	San Francisco	Propeller
Gouverneur General La Ferriere	June 28	Collided quay	Marseilles	Badly
Henry Ford	June 18	Aground	Off Martin Point	Sank
Hoedic	June 5	Aground	Havre	Not stated
Innaren	June 26	Disabled	54:39N, 21:08W	Lost stern post
Indianapolis	June 23	Ashore	Point Hudson	Floated
Islington	June 7	Collided jetty	Barry	Damaged
Ile De La Reunion	June 18	Disabled	Corunna	Boiler
J. P. Morgan	July 7	Struck pier	Duluth	Stem; bow
J. H. Sinclair	June 12	Ashore	Miquelon	Not stated
John C. Kirkpatrick	July 1	Disabled	Off Duxbury Reef	Not stated
Jupiter	June 4	Collided whf.	Buenos Ayres	Not stated
Jolly Laura	June 11	Collision	Thames	Slight
Jules Grevy	June 25	Collision	Marseilles	Slight
J. & J. Monks	June 25	Aground	Victoria Channel	Floated
Kafiristan	June 11	Struck whf.	Montreal	Leaking
Kureha Maru	May 23	Aground	Luchu Islands	Total loss
Kerrymore	June 15	Struck pierhd.	Liverpool	Stem
Kronstad	June 14	Struck dock wall	Not stated	Stem; plates
Kowarra	June 19	Aground	Brisbane	Slight
Kroomsted	June 27	Sank	East Greenwich	Floated
Lorient	June 21	Ashore	Isle Madame	Not stated
Lake Ellithorpe	June 23	Collision	Off Barnegat	Not stated
La Frileu	June 11	Collision	Lat. 46N. long. 55: 38W	Total loss
Llandovery Castle	June 7	Collision	Marseilles	Slight
Lemnos	June 11	Fire	Durazzo	Considerable
Letty	June 18	Struck rocks	Nr. Brest	Leaking
Llandovery Castle	June 22	Collided dock	Tilbury	Stem
Lingfield	June 21	Fire	Monte Video	No. 2 hold
Lady Maud	June 28	Disabled	Shoreham	Leaking
Madras City	July 11	Aground	River Mersey	Floated
Manx Isles	June 4	Stranded	Nr. Punto Hieago	Not stated
Mary Sinclair	June 6	Ashore	Hilbre Island	Not stated
Mesopotamia	June 7	Stranded	Mausoleum Reef	Floated
Marlwood	June 8	Aground	Off Ulkogrunni	Floated
Mousse Le Moyec	June 7	Collided jetty	Barry	Slight
Maimyo	June 15	Disabled	Nr. Hamburg	Lost prop.
Mystery	June 14	Aground	Nr. Kingsgate	Floated
Michael E. Tricoglu	June 15	Collision	Trangsund	Port side
Magnolia	June 19	Sank	Off Fastnet	
Marconier	June 26	Struck rocks	Algiers	Rudder
Marianne	June 28	Collision	Aland Sea	Badly
Matje	June 28	Struck submgd. obj.	Rostoff	Propeller
Nasemond	July 4	Collision	Nr. Quarantine	Not stated
Nerissa	June 11	Collision	Lat. 46N, long. 55: 38W	Not stated
Norman	June 8	Sank	Wapping	
Nicolaos	June 13	Collision	Cadiz	Port bow
Neion	June 13	Aground	Buenos Ayres	Floated
Nivose	June 28	Aground	Porto Ferrairo	Floated
Ononette	June 14	Aground	Moncton	Floated
Oaxaca	July 13	Ashore	Wrangell	Not stated
Plas Dinam	June 23	Ashore	Nr. Cape Race	Not stated
Point Loma	June 24	Disabled	San Francisco	Engine
Pisagua	June 4	Ashore	Valparaiso	Not stated
Portvale	June 2	Struck jetty	Swassea	Propeller
Persiano	June 6	Disabled	Lisbon	Machinery
Porjus	June 7	Collision	Off Tyne	Not stated
Philip T. Dodge	June 11	Collision	Three Rivers	Damaged
Praga	June 15	Collided gate	Holtenau	Stem
Pelican	June 22	Aground	No. Minehead	Not stated
Phoebe	June 25	Sank	Thames	
Pentirion	June 28	Struck obj.	Marseilles	Propeller
Penang Maru	June 27	Collision	Shimonoseki	Badly
Ruth Martin	June 25	Aground	Swash Channel	Floated
Rejoice	June 9	Sprang Leak	North Sea	Sank
Ryuun Maru	June 14	Fire	Nr. Sasebo	Not stated
Royston Grange	June 4	Collision	Buenos Ayres	No. 1 hold
Ravenscraig	June 20	Disabled	Bridlington	Boiler
Regais	June 22	Ashore	Aberdeen	Not stated
Roebuck	June 26	Collided wall	Jersey	Stem
Regulus	June 28	Aground	Morlacca Channel	Not stated
Soodoc	June 20	Aground	St. Clair River	Floated
St. Cyr	June 17	Fire	New York	Slight
San Florentino	June 27	Aground	English Bank	Floated
Salem	July 1	Collision	Delaware	Starboard side
Silverhazel	July 4	Collision	Nr. Quarantine	Port bow
Seminole	July 9	Collided bkwt.	Madras	Stem
Streonshahl	June 2	Struck quay	Deptford	Considerable
Salvus	June 7	Collision	Off Tyne	Stem
Sabbia	June 11	Struck quay	Marseilles	Slight
Sautata	June 7	Explosion	River Atrato	Not stated
Shinto Maru	June 11	Struck sub. obj.	So. of Shaliutien	Port side
Silveroak	June 11	Disabled	Singapore	Steering gr.
Sinclair	June 11	Ashore	W. of Miquelon	Not stated
Syria	June 8	Not stated	Cape Drepano	Total loss
Spero	June 15	Ashore	Sedre Udde	Floated
San Quirino	June 22	Collision	Buenos Ayres	Stem; plates
Standfast	July 5	Disabled	St. Johns	Leaking
San Manuel	June 25	Disabled	Hull	Engine
Tirreno	June 4	Aground	Buenos Ayres	Floated
Tiberton	June 14	Aground	Bahia Blanca	Not stated
Toyohiko Maru	June 20	Ashore	Shiriyasaki	Leaking
Tarapara	June 21	Collision	Valparaiso	Slight
Vegesack	June 13	Aground	Nr. Santarem	Not stated
Valborg	June 20	Stranded	Nekmangrund	Engines
Valkenburg	June 25	Aground	Porcia	Rudder
Ville D'Oran	June 26	Fire	Havre	Slight
West Totant	June 13	Collision	Nr. Tortugas	Starboard side
Washington	July 2	Disabled	Eureka	Tail shaft
Will Everard	June 11	Collision	Thames	Slight
White Bay	June 14	Storm	Stockton Beach	Wrecked
Woodcote	June 15	Collision	Millwall	Not stated
William A. McKenney	June 17	Disabled	Panama	Propeller
Wheelsman	June 20	Struck dock	Liverpool	Plates
Wyke Regis	June 21	Disabled	Lundy Island	Engine
Watkins F. Nisbet	June 25	Ashore	Nr. Cornwall	Not stated
Yorkshire	June 11	Fire	Bristol	No. 2 & 3 hold
Yero Carras	June 15	Collision	Trangsund	Not stated
Yeizan Maru	June 20	Stranded	Cape Kabafuto	Leaking
Zuiho Maru	June 23	Stranded	Off Fusan	Leaking

Steamship Budgeting

(*Continued from Page* 20)

siderable item, is maintained by means of a requisition submitted at the end of each voyage to the budget control office by the responsible operating officials. This requisition gives in detail the repairs to be made, and an estimate of the cost. Any unforeseen items caused by accidents or necessary reconditioning which were not included in the original estimate of expenses, are considered as additions to the original budget.

Although this budget plan had been in operation but a short time when this report was prepared, the results secured were very satisfactory. The treasurer of the steamship company commenting at the time on this phase of the work said:

"Although our present budget system has been in use but a short time, the results we have obtained thus far have more than equaled our hopes. I think that the greatest advantage to us has been the knowledge of operating cost which our department heads have secured. Moreover we have been able to develop a very desirable and friendly rivalry among our various department heads in regard to keeping their operations within the budget. Our efforts thus far have been most gratifying."

Despite the fact that some steamship company executives apparently feel that budget principles cannot be applied to steamship operations the foregoing description of the successful budget plans in actual use shows clearly that in these two cases at least successful budget systems are in operation. After all, budgeting is not crystal gazing, but simply an attempt to estimate in advance, as accurately as possible, future performances. While it is true that the budget is only as good as the estimate, it is also a fact that some definite system of planning for the future is much better than having no estimate at all and relying on rule-of-thumb methods.

Shipyard Report Shows Little New Building

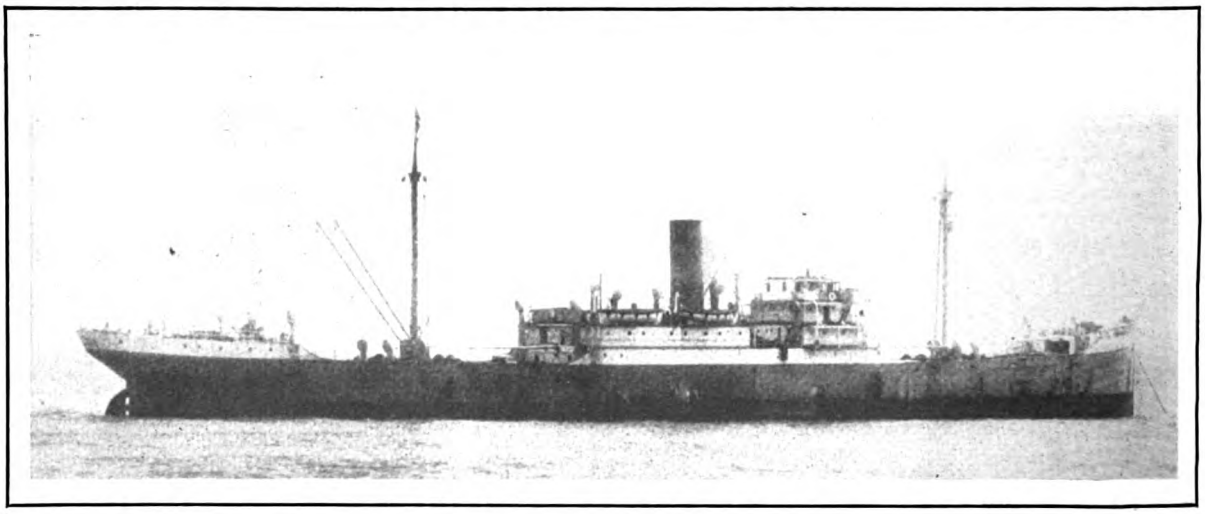
The twenty-ninth annual report of the American Ship Building Co., Cleveland for the fiscal year ended, June 30, 1928 is not nearly as favorable as the report of the year before. This was to be expected due to a much smaller amount of new ship construction. New ship work was nearly $4,000,000 less though the repair business and miscellaneous contracts were but only slightly below 1927. The smaller volume of business did not yield a satisfactory profit. The surplus, June 30, 1928 after payment of dividends on preferred stock to the amount of $47,636.75 and $1,172,492 on common stock stood at $5.654,179.81 as compared with $6,407,722.97 for June 30, 1927. The net profit for the year ended June 30, 1928 was $510,695.44.

W. H. Gerhauser, president of the company said in his report, "It is quite apparent from the experience of last year and the current season that the fleet of bulk lake freighters is ample for the present to handle all the ore, coal and grain freight offered and excepting possible replacements of losses by storm there is little likelihood of any bulk lake freighters being constructed within the coming year. Specialized trades are being constantly developed as is evidenced by the new ship construction done by the company during the past year which consisted of two oil barges and two tankers and the conversion of one bulk freighter to a self-unloading stone carrier. The indications are that more of these special type ships will be required in the near future."

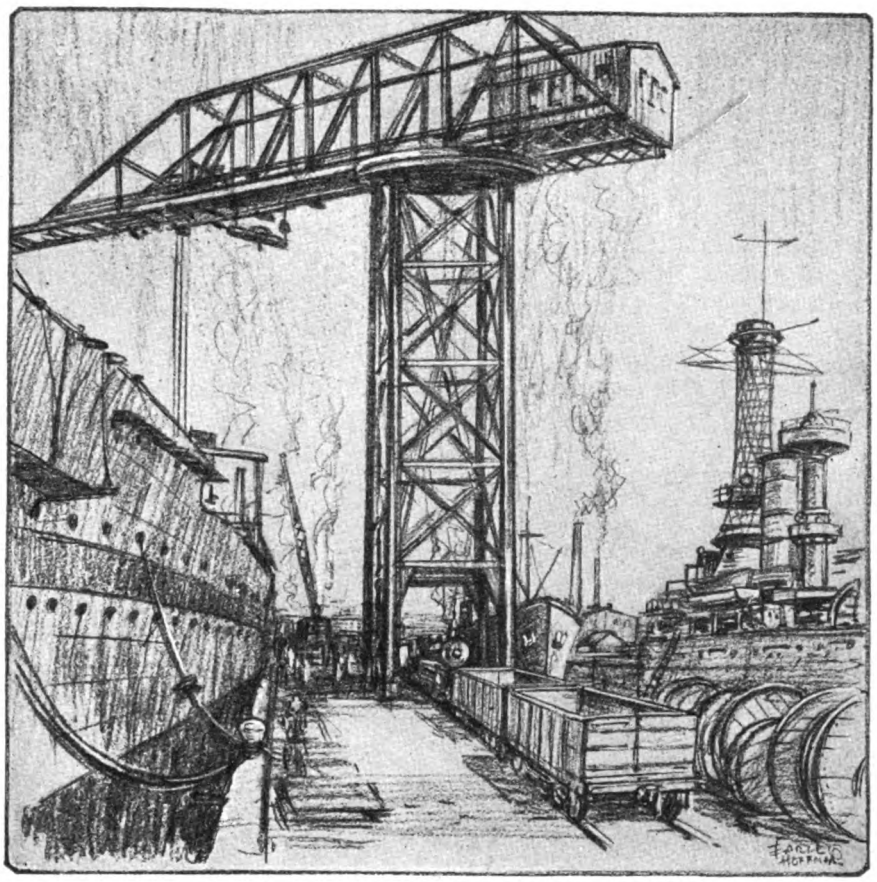
H. W. Ordeman, in charge of Pier 86 for the United States line befor the lease was turned over to the Hamburg American line, has opened an office in the Federal Trust Co. building, Newark, N. J. as a civil engineer to do consulting and supervision work. Mr. Ordeman is particularly well equipped in docks and water front developments.

Sell Phoenix Bridge

The shipping board on Sept. 18 approved the sale of the S. S. PHOENIX BRIDGE for $20,000 in cash to the Pocahontas Steamship Co., New York. The sales contract specifies that the vessel is to be used for storing coal in New York harbor or converted into a coal barge, but that under no circumstances in view of the low price will the ship be operated as a steamer. She is of 5095 tons deadweight and when bought was laid up in the James river.



S. S. Steel Maker of the Isthmian Steamship Lines on arrival at Quarantine, New York, late in August after a 7700-mile voyage from Samoa. Though the vessel's hull had been very seriously damaged the temporary repairs incident to salvage brought her through under her own power without further mishap in an elapsed time of 35 days, or at practically normal speed. See page 52 in the August number of Marine Review for an account of the salvage circumstances



A Shipyard That is Different—

THE Newport News Shipbuilding and Dry Dock Company is different inasmuch as it offers a complete service.

Designing, construction, converting, repairing and refitting are made possible by a combination of resources, facilities, and capacity unsurpassed in America.

Ship owners and prospective builders have found this centralized responsibility, by an organization qualified by matured experience to be highly profitable regardless of the class of work, for this service is as flexible as it is comprehensive.

In the preparation of plans and in the execution of the work there is always afforded close and intelligent co-operation with the client to the end that maximum ship safety and operating economy is assured.

Newport News Shipbuilding and Dry Dock Co.

Newport News, Virginia *233 Broadway, New York City*

FACILITIES UNSURPASSED IN AMERICA

Builds Super Liners

(*Continued from Page* 23)

also used for other equipment in these spaces. Perhaps this means one will be allowed to cook meals as at home.

It is interesting to note that the building of these two ships has occupied a total of about 10,000 workmen in the two shipyards. Many others, of course, have done work directly or indirectly in the building of the two liners. For both vessels a total of about 47,500 tons of steel plates and shapes were used. Each ship had a launching weight of somewhat more than 32,000 tons. The four propellers are cast solid of bronze and each weighs 37,500 pounds.

The crew of each ship will number about 1000. Compared with the COLUMBUS the personnel in connection with the machinery and equipment of the BREMEN and EUROPA will be increased 90 per cent. Deck officers, sailors and others occupied with duties of the deck department will be increased in number over those on the COLUMBUS in a like amount. The service personnel will also necessarily be very large, in taking care of the lodging, service and catering, for a total of 3200 persons including the crew.

With the coming out of these two fine ships the North German Lloyd will be able to more than meet the speed, comfort and luxury now offered by other lines. Germany expects through the entering wedge of these ships to fully regain her prewar standing of her mercantile marine.

Diesel Conversions

Bids covering the rebuilding of the MONTICELLO and MOUNT VERNON are to be opened Oct. 2. In any case Capt. R. D. Gatewood, manager of maintenance and repair of the Emergency Fleet Corp. said that no action will be taken in awarding contracts to do this work prior to the opening of bids for the purchase of the United States lines and Merchant lines.

The status with reference to the three diesel electric conversions now being carried on by the Emergency Fleet Corp. is as follows: The COURAGEOUS is under way at the Federal Shipbuilding and Dry Dock Co., Kearny, N. J. and it is expected will be completed early in November. At this writing the operating company had not been designated. The TRIUMPH which is being converted in a similar manner at the Boston navy yard is scheduled for delivery about Jan. 1, while the DEFIANCE under way at the Norfolk navy yard will be completed about Feb. 1, 1929. Operators have not been designated for either of these two ships. The contract for these jobs averages about $1,250,000 each. These vessels will have a minimum speed of 13 knots and an extreme speed of considerably more.

The shipping board on Aug. 28, approved acceptance of the bid of the Maryland Dry Dock Co. for the installation of two of the eight recently completed diesel engines in the respective vessels selected for conversion to motorships at a cost of $1,064,368. The original bids for the other six vessels in view of the fact that they were so much higher (the figures were given in the September number of MARINE REVIEW) were thrown out. New bids for the conversion of these six vessels were received by the shipping board on Sept. 19. These bids are now being considered but at the time this was written no action had been taken. It is believed however, that awards on the basis of the new bids will shortly be made.

The ships to be assigned the Maryland Dry Dock Co. for the installation of diesel engines are the S. S. GALVESTON and the S. S. OLDHAM. Engines to be installed in these two vessels were built by McIntosh & Seymour Diesel Engine Co.

Award Mail Contracts

Postmaster General New, on Aug. 28, announced the award of contracts for ocean mail service on seven routes on the Atlantic and Pacific oceans. These contracts will go into effect Oct. 1 and cover a period of ten years. A significant fact for the upbuilding of the merchant marine and for shipbuilding is that all these contracts call in due course for the construction of new vessels.

Under the Jones-White act compensation for mail service is based on the speed of vessels and increases with the speed. Different speeds are given classifications and the compensation is noted in dollars per mile traversed. The successful bidders, the routes and the contract prices of the awards made are as follows:

American Scantic line, route number 16, New York to Copenhagen, vessels of class 6, $2.50 per nautical mile; class 5, $4; class 4, $6; class 3, $8.

American West African line, route number 17, New York to West African coast; class 6, $2.50; class 5, $4; class 4, $6.

Atlantic and Caribbean Navigation Co. (Red D line); route 18, New York to Maracaibo; vessels of class 6, $2.50; class 5, $4; class 4, $6.

New York and Cuba Mail Steamship Co. (Ward line); route 21, New York to Vera Cruz; vessels of class 5, $4; class 4, $6.

Lykes Brothers Steamship Co.; route 23, Galveston to Santo Domingo; vessels class 6, $2.50; class 5, $4; class 4, $6.

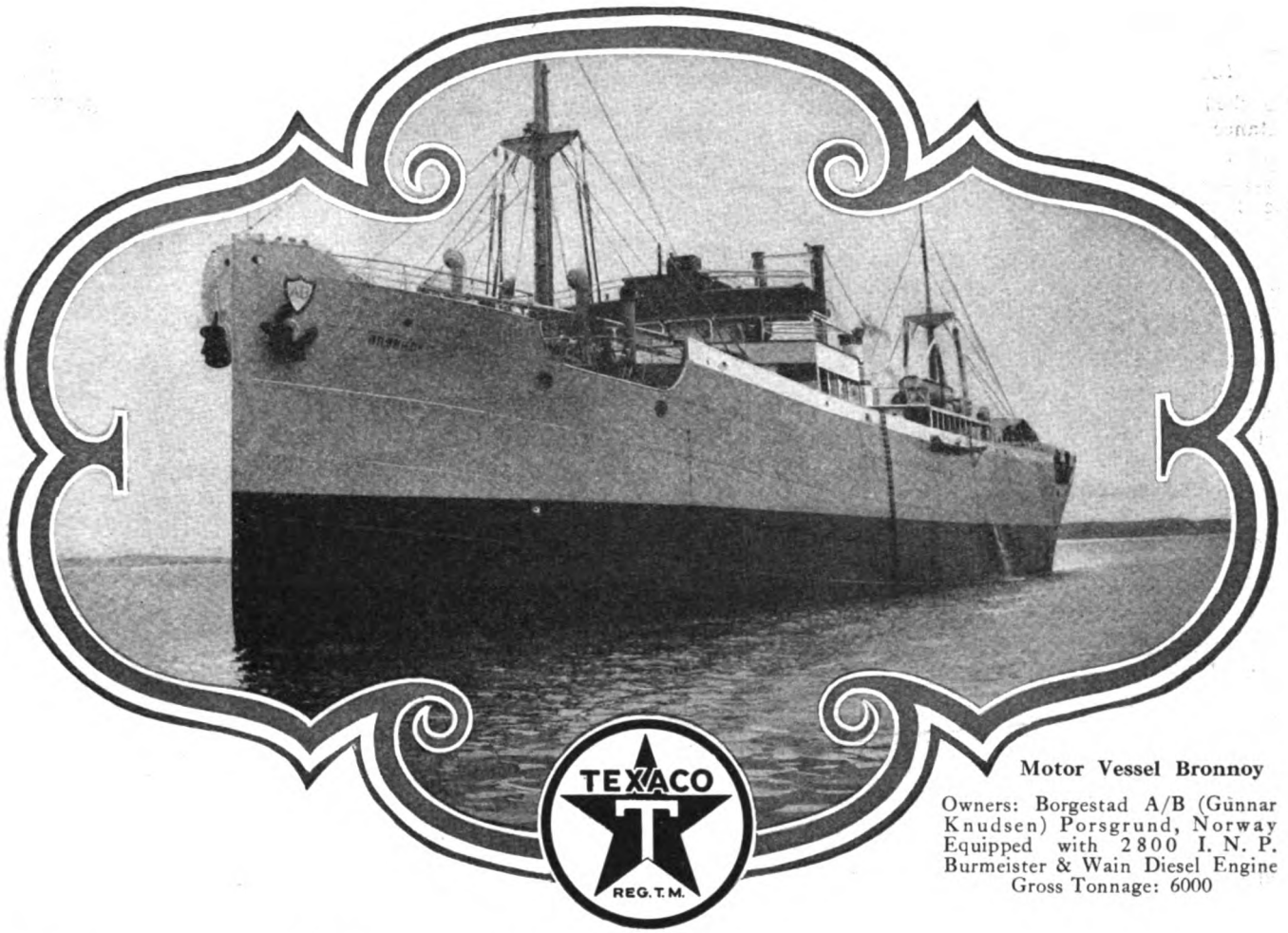
States Steamship Co., route 28, Portland, Oreg. to Manila; vessels class 6, $2.50; class 5, $4; class 4, $6; class 3, $8. This company was also awarded contract on route 29 from Portland, Oreg., to Dairen.

De La Vergne Machine Co. Goes to Philadelphia

The De LaVergne Machine Co., builder of diesel engines and ice machines and one of the important subsidiaries of the old William Cramp & Sons Ship & Engine Building Co. and now one of the units of the Cramp-Morris Industrials Inc. is in the process of moving its entire plant and offices from 138th street and East river, New York city to the site of the Cramp shipyard. The company is taking possession of the very fine marine machine shops of the shipyard. More than $2,000,000 worth of tools and inventory of the De LaVergne Machine Co. is being moved. It is expected that by November the company will be completely installed in the Philadelphia building.

From a manufacturing point of view efficiency of operation will be increased as will be the capacity. For about forty years the De LaVergne company occupied buildings covering approximately three city blocks on the East river in New York city. The existing facilities of the Cramp shops and those that will be added cover between three and four acres of floor space. A close proximity of the I. P. Morris Corp. another subsidiary will mean that it is necessary tools and personnel may be interchanged contributing to continuous operation.

Henry Williams, vice president of the Baltimore and Caroline Steamship Co. has been elected president to succeed the late Mason L. W. Williams. George Weems Williams was elected vice president and Theodore Weems Forbes, L. E. Mason and J. E. Jones were elected directors. This company operates a fleet of steamers from Baltimore to southern ports.



Motor Vessel Bronnoy

Owners: Borgestad A/B (Gunnar Knudsen) Porsgrund, Norway
Equipped with 2800 I. N. P. Burmeister & Wain Diesel Engine
Gross Tonnage: 6000

In the Main Cylinders —and in the Crankcase:—

TEXACO URSA OIL

When the owners selected **TEXACO URSA OIL** for the lubrication of the Burmeister & Wain Diesel Engine of this vessel, they did so for the reasons that apply under *any* make of Diesel:—

First:— They wanted a *clean* oil

Second:—They wanted an oil with proper viscosity to meet bearing pressures.

Third:— They wanted an oil that can be *depended* upon to maintain effective cylinder compression so as to assure *easy starting* and delivery of *full* power.

TEXACO URSA OIL meets these requirements in every respect.

It is protecting the engine of the "*Bronnoy*" the way a Diesel Engine lubricant should.

The Diesel engine of the Motor Vessel *Bronnoy* is prepared for *any* test of wind or weather between U. S. Pacific Coast ports and the Far East.

STOCKS KEPT AT PORTS THROUGHOUT THE WORLD

There is a Texaco Lubricant for Every Purpose Aboard Ship

THE TEXAS COMPANY
MARINE SALES DIVISION
Dept. KX, 17 Battery Place, New York City
OFFICES IN PRINCIPAL CITIES

Scrap Surplus Ships

(*Continued from Page* 36)

tablished in the Detroit river a short distance from the mouth of the River Rouge.

As soon as the barges were moored the fires were pulled and boilers drained. Water bottoms and bilges were all pumped dry. Seacocks were filled with tallow and blanked off. Engines were thoroughly gone over and oiled, and boilers were cleaned. Unslaked lime was put in boiler shells and the boilers sealed up airtight. The lime collected all moisture and prevented rusting and deterioration of steel shells and tubes.

From the reserve fleet a ship to be dismantled was towed about four miles to the River Rouge turning basin, and tied up at the north wall of the slip. Here all consumable stores, foodstuffs, dishes, hardware, furniture, and like objects were first removed.

Wood was one of the important items salvaged. Rails and deck lumber were of excellent fir. Oak ceiling and pannelling were recovered from each ship to the amount of 3000 and 4000 feet. Much of the panelling was of the tongue and groove variety and of high quality. It was removed intact and used in various construction jobs. Flooring was salvaged in large quantities. It also went into construction work. Thirty-five to 40 doors were saved from each ship; some were used on cars of the Detroit, Toledo & Ironton railroad; some were put into refrigeration plants as panelling.

Wood came from many places on the ships: From masts, booms, bunks, drawers, etc. Planking 2½ to 5 inches thick served as cargo batten in the holds of the boats. Hatch covers were taken off intact and used as platforms in construction work.

Scrap wood taken from the ships was taken first to tables where the nails were removed. It was then placed on a moving belt and carried a few feet to the ship woodworking plant. There it was cut to specified measure for use in making boxes and crates, for planking in construction work, for bulkheads to brace shipments in railroad cars, etc. Any piece of wood, 2 inches wide by 6 inches long could be used. Fifteen or 16 cords of wood too small to be salvaged were sent to the cupolas each working day.

The wood removed from each ship averaged between 80,000 and 90,000 feet. Scrap wood from the submarine-type boats was carried as cargo in the lakers. Sawdust was utilized in many ways: it was soaked in oil and used in sweeping floors; it was used in the butcher shops of the different Ford commissaries; it was used in the tumblers; it was sent to the pulverizers and mixed with coal for certain purposes. Twenty-five to 30 kegs of nails were sent to the electric furnaces each day and 32 or 33 pounds of steel derived from them. As many bolts and nuts as possible were salvaged and rethreaded; others were reduced to steel.

Three to four hundred pounds of paper was salvaged each day. This included not only waste paper but beaverboard and other paper combinations used in ship construction. All paper went to the company's paper mill where it was reclaimed. Radiators were removed intact, reconditioned and used in new buildings. Molding was saved as such when in good condition.

Salvaged Equipment in Use

Furniture formed an important item. Oak swivel chairs and oak tables were reconditioned and used in various ways. Many of them were installed at the Henry Ford trade school. Some of the tables were used by draftsmen and clerks. Imitation leather on the cabin settees was preserved and used on Detroit, Toledo & Ironton work cars. Oakum packing was salvaged.

Hardware was removed in large quantities: hinges, locks, and door knobs were all reconditioned and sent to stock. All brass fasteners were saved; those that could be were preserved in their original form, others were reduced to metal. Mirrors that were in good shape were used in different buildings; defective ones were sent to the glass plant and used as cullet in the production of new glass. Cabin windows of standard size were saved and used in construction work; all other glass including porthole windows and picture frames was remelted as cullet.

Electricians removed all electrical fixtures. Navigation instruments were saved whenever found. Most of them, however, had been removed before arrival at Fordson. Engine room control systems were saved intact.

Forty to 50 steam and oil gages were salvaged from each ship; they were reconditioned and sent to power stock. Pumps of different sizes and purposes were recovered in large numbers. Steam injectors and ejectors were salvaged. Ice machines were saved as such.

Globes, lights, wash basins and lanterns all went to stock for future use; coffee urns, galley stoves and kitchen utensils were used in small quantities at the company's lumber camps; some scales were reconditioned and used in the Ford commissaries; eight meat chopping blocks were used in the commissaries; signal flags were cleaned and the cloth used for different purposes.

Cork taken from ice boxes and in small quantities from crews' quarters was preserved and put to various uses; much of it was sent to the Iron Mountain plant where it was used as dry kiln insulation. Asbestos was cut from the pipes and boilers. It was sent to a special asbestos plant where it was ground and molded into new blocks. Oil recovered from the engine room fuel-oil tanks and the storm-oil tanks was sent to the oil salvage department and reclaimed. Paint was found in many ships' storerooms. It was reclaimed.

Six or seven ventilators were reconditioned and sent to the commissary at the Lincoln plant. Others were sent to the fabricating shop where they were recovered as tin. Screen from the ships was in poor condition and was remelted. Metal ladderways were preserved as such and used in construction. Scuff plates were put to the same use.

Bracket steps on the smoke stacks were used as fire ladder. Port-hole lids were remelted for their brass. Steering wheels were stored. The brass sprocket chains, cams and pulleys of the steering apparatus were all preserved and put to different uses.

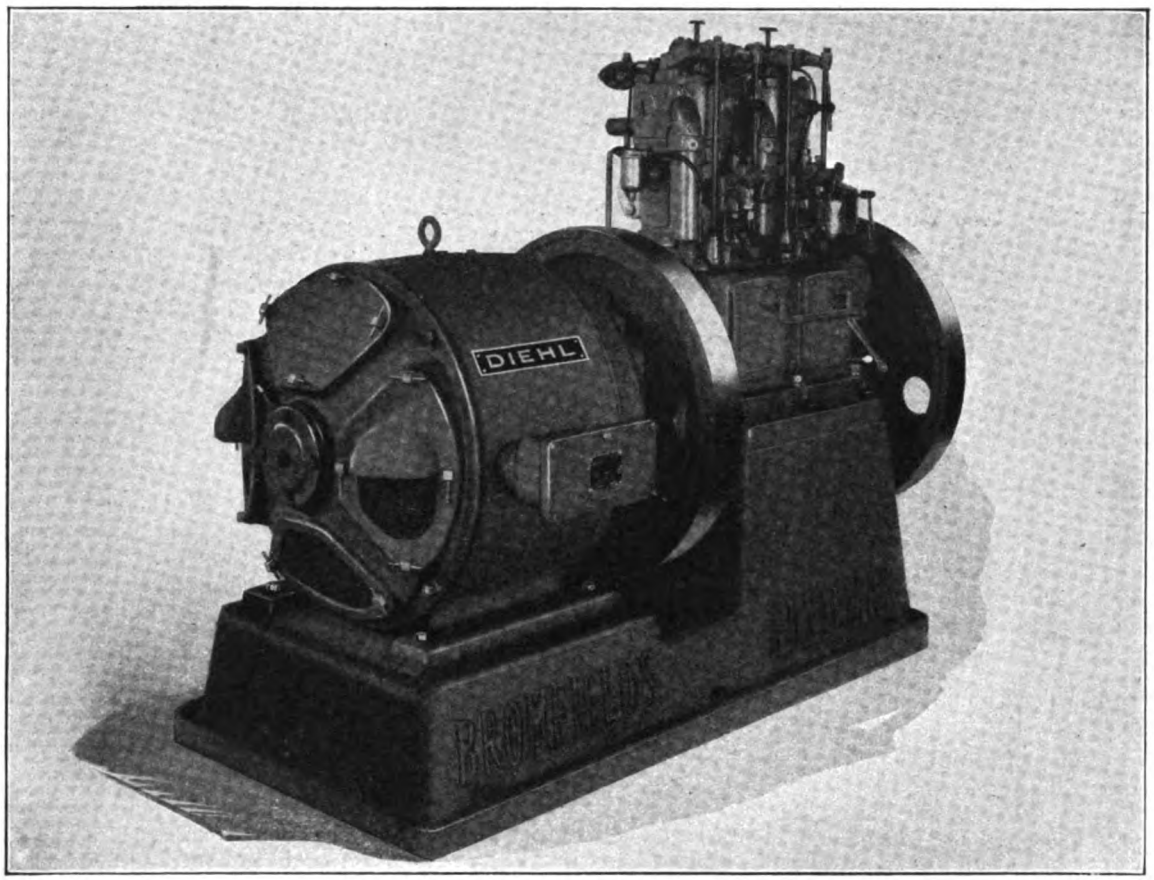
Steel cable which was in good condition was saved intact. Frayed cable was remelted. Towing hawsers were put to various uses. Those in good shape were saved intact; others were unstranded to make twine; still others were chopped off for use as seat cushion packing.

All pipe was removed without cutting and sent to a special pipe salvage department for reclaiming. Masts were burned off at the deck line, the rivets cut out, the wood parts dismantled and the outer shells rolled into sheet steel. Winches and windlasses were removed and sent to storage.

One hundred seventy-eight men were employed at the wood dock, not including those engaged in the removing of pipe and electrical fixtures. They stripped a ship of everything that could be loosened and moved readily. By the time a vessel was ready to be moved to its place on the main dismantling dock it had been fairly well cleared to the hull of all useful material.

(The fourth installment will be presented in an early issue).

DIEHL



Diehl L-16 10 K. W. 115 Volt D. C. Marine Generator

Diehl

GENERATORS FOR DIESEL ENGINES

Direct connected to Diesel engine for lighting and auxiliary power on trawlers now being built for the Massachusetts Trawling Company by the Bethlehem Shipbuilding Company, Quincy, Mass.

DIEHL MANUFACTURING COMPANY

Electrical Division of THE SINGER MANUFACTURING CO.

ELIZABETHPORT, N. J.

Safety on Shipboard

(*Continued from Page* 41)

erator who has attained the one goal will, or can, attain the other.

Carelessness and Ignorance

Marine safety engineers frequently proclaim that virtually all personal injuries and accidents are due either to carelessness, ignorance or neglect. Carelessness is inexcusable, and therefore merits the consequences that always come to the careless. Continual carelessness is indisputable evidence either of ignorance or indifference. Carelessness is a crime that the conscience punishes with great severity, but the conscience does not support the suffering dependents or the injured individuals.

The national board of steam navigation, which I have the honor to represent, has always been much interested in the subject of maritime accident prevention both as relating to ships and their cargoes, and personal injuries. The naval architects design and the shipyards construct ships which are the wonder of the age and virtually unsinkable. The government, through the department of commerce, has given us the rules of the road, and accurate charts of all navigable waters marked with beacons, lighthouses and buoys; and yet with all these factors for the prevention of accidents property and human life are continually damaged or destroyed.

Those steamship and maritime organization officials who are lending their efforts in this great movement of accident reduction deserve the highest praise from their associates and from their employes. To those executives who have not yet seen the handwriting on the wall let it be known at this time that unless they take the necessary steps to encourage accident prevention work on their ships, wharves and terminals, the government of the United States will undoubtedly soon enact legislation making it imperative for them to bear their share of the responsibilty.

Plan a Self Unloader

The Pan-American Industrial Corp. who recently bought four vessels in France for carrying stone products between Brazil and Buenos Aires is proposing to build a large self-unloading type of freighter. Donald & Sharp, the firm of New York naval architects has worked out a type of self-unloading vessel specifically suited to this trade. In general features it is of a type that has been in successful service on the Great Lakes but modified to meet the conditions of service at sea.

The projected self-unloader is to be 450 feet in length, 68 feet in beam and 35 feet in molded depth. The deadweight carrying capacity is to be 9000 tons on a draft of 20 feet and 6000 tons on a draft of 16½ feet. Turbines are to be used for propulsion, steam being supplied by water tube boilers at a pressure of 225 pounds per square inch. The vessel will be single screw and oil is to be used for fuel. All auxiliaries and a conveying system will be operated electrically. Electricity will be developed by turbo generators.

Palmetto Line Sold to Private Interests

Sale of the American Palmetto line to the South Atlantic Steamship line, Savannah, Ga., for the sum of $211,455 was approved by the shipping board Sept. 25. The sale involves the transfer to private American ownership of nine vessels aggregating 70,485 deadweight tons.

The American Palmetto line operates between South Atlantic ports of the United States and ports of the United Kingdom and Northern Continental Europe, in the French Atlantic-Hamburg range.

Under the agreement of sale the purchasers will maintain a minimum total of thirty-six sailings a year for a period of five years. Existing contracts covering installation of refrigerating facilities on the vessels are assumed by the purchaser and the purchaser is privileged, within 90 days, to purchase a tenth vessel under the terms and conditions governing the sale of the nine ships sold.

The ten ships of the line and their deadweight in tons, from which the purchaser will select nine, are as follows: COLDWATER, 7840; FLUORSPAR, 7825; LIBERTY GLO, 7825; MAGMERIC, 7840; SACCARAPPA, 7825; SCHOHARIE, 7825; SHICKSHINNY, 7825; SUNDANCE, 7840; TULSA, 7825; WILDWOOD, 7840.

Large Tug Ordered

Contract for constructing one of the largest diesel powered wood tugs on the Pacific has been obtained by the Ballard Marine Railway Co., Seattle. The owner is Young Bros. Ltd., Honolulu, for whom the same plant built the diesel powered tug MAHOE in 1925. The new craft will be called MIKIMIKI or in the Hawaiian tongue "up on her toes." The dimensions will be: Length 125 feet, beam 28 feet and depth 14 feet.

Safety Congress Meets in New York City

During the week of Oct. 1 to 5 the seventeenth annual safety congress of the National Safety council will hold its meeting in New York city. Headquarters for the marine section will be at the Waldorf Astoria. The following papers are to be presented: *The Importance of the Human Element*, by Arthur J. Grymes, president, National Board of Steam Navigation, New York city; *The Relation of Classification to Safety of Ships*, by Capt. C. A. McAllister, president, American Bureau of Shipping; *Marine Accidents—Their Causes and Remedies*, by Capt. Reginald Fay, marine superintendent, New York Central railroad; *Gage Glasses—Their Make, Use and Abuse*, by W. A. Tucker, manager Moncrieff-Rogers Division, Jenkins Brothers Inc.; *The Personal Equation in Safety*, by D. N. Hoover, supervising inspector general, Steamboat Inspection Service; *Echo Depth Sounding to Promote Safety on the Surface of the Sea*, by Capt. H. J. W. Fay, vice president, Submarine Signal Corp.; *Medicine in Industry*, by Dr. Francis X. Crawford, past medical officer, United Fruit Co.

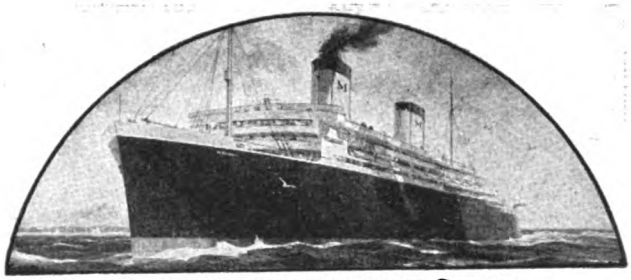
Copies of these papers may be obtained by applying to Arthur M. Tode, vice chairman of the marine section, c/o Texas Co., 17 Battery Place, New York.

Other addresses will be delivered by John P. Magill of the New York Maritime exchange; Herbert Heberman, president Export Steamship Corp.; H. B. Walker, president of the American Steamship Owners association; Joseph J. Farrell, Travelers Insurance Co.; David A. Burke, general manager of the United States lines and Commander W. F. Towle, United States Coast Guard.

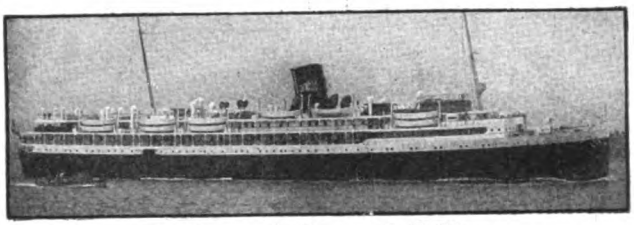
Captain Anderson Dies

After a long, active and useful life, both afloat and ashore, Capt. William Anderson, well known in maritime circles in Boston and for many years connected with the United Fruit Co. died at Trumbull hospital, Boston, at the age of 77. Always a sailor, he came by his love for the sea honestly for he was born in Denmark in 1851 and came to the United States at the age of 15 on a sailing vessel. From that time on he followed the sea first as a sailor then as officer and finally as captain until 1901 when he was called in from active sea duty and placed in charge of the marine department of the company in Boston.

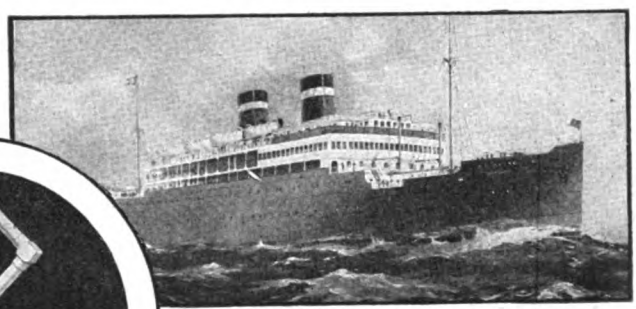
These distinctive ships are *completely* equipped by RCA



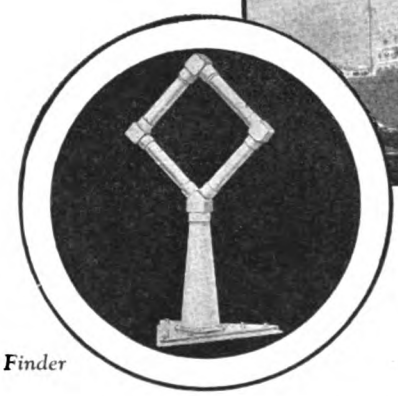
S. S. Malolo, Matson Navigation Company



S. S. Yarmouth, Eastern S. S. Lines



M. S. Santa Maria, Grace Line



RCA Radio Direction Finder

The Radiomarine Corporation of America now furnishes radio service to more than 1300 American vessels. More than 800 vessels of 120 steamship companies now carry either receivers, transmitters, or radio direction finders furnished by RCA.

Radiomarine storerooms and service stations in charge of radio men of long experience are located at the following ports:

Boston	New Orleans	Honolulu
New York	Port Arthur	Cleveland
Philadelphia	Galveston	Chicago
Baltimore	Los Angeles	Buffalo
Norfolk	San Francisco	Duluth
	Seattle	

Complete RCA Service includes:

1. *Equipment*—transmitting and receiving, vacuum tube type; radio direction finder.
2. *Service on Equipment*—regular inspections at any of sixteen ports; maintenance of conveniently located stocks of spare parts for repairs and renewals.
3. *Operators*—detailing of experienced operator personnel to the ship.
4. *Coastal Stations*—maintenance of thirteen coastal stations on the Atlantic, Pacific, Gulf and Lakes, for prompt, efficient handling of radio traffic.
5. *Accounting*—checking and settling of accounts.
6. *Miscellaneous*—attention to numerous miscellaneous details.

Radiomarine coastal stations are located at the following points:

Chatham, Mass.	Tuckerton, N. J.	Los Angeles, Cal.
New London, Conn.	Baltimore, Md.	San Francisco, Cal.
East Moriches, L. I.	(city station)	Chicago, Ill.
New York, N. Y.	Galveston, Tex.	Cleveland, Ohio
Buffalo, N. Y.		Duluth, Minn.

RADIOMARINE CORPORATION
OF AMERICA
66 BROAD STREET
NEW YORK

New Trade Publications

STEEL CASTINGS—Nugent Steel Castings Co., Chicago, has issued a bulletin to call attention to intricate, thin sections, designed for severe service. A number of castings for varied uses are shown as illustrations of what may be accomplished by use of carefully selected analysis of steel for the purpose.

DIE CASTINGS—Artistic work in die castings is shown in a bulletin by the Doehler Die Casting Co., Brooklyn, N. Y. Metal Cabinet corners form a basis of the exhibit, indicating what may be done in adornment.

PACKING CUTTER—Chickasaw Machine & Foundry Co., Memphis, Tenn., has issued a circular on its packing cutter. This is designed to cut packing for piston rods, valve stems and similar uses, to fit exactly and without waste.

ANTI-CORROSIVE METAL—The American Sheet & Tin Plate Co., Pittsburgh, has issued a booklet devoted to its copper-bearing steel sheets. Resistance to corrosion in service and in test sheets exposed to weather is shown in illustrations. Causes of corrosion and factors of resistance are explained. Illustrations indicate many uses to which these sheets are put.

MOTORS—A bulletin by the Allis-Chalmers Mfg. Co., West Allis, Wis., covers its line-start indication motors. Illustrations show details of construction.

ELECTRICAL APPLIANCES—General Electric Co., Schenectady, N. Y., has issued an index of publications. The new system of numbering is explained and cross reference between old and new is shown.

ROLLER BEARINGS—International Nickel Co., New York, presents in a current bulletin information on roller bearings in railroad service. It is based on performance of equipment in service for some time. Another bulletin by the same company gives details of construction of nickel alloy steel roller bearings carrying heavy loads at high speeds, with tables showing physical properties required of the materials used to meet this severe service.

NEW HOISTS—Silent Hoist Winch & Crane Co., Brooklyn, N. Y., in a current bulletin features various types of vertical and horizontal capstan winches and single and double-drum winches with electric or gasoline drive. It is well illustrated to show a wide variety of uses.

ACETYLENE—International Acetylene association, New York, has issued a booklet on the relative value of acetylene and city gas as fuels for cutting iron and steel with oxygen. It covers the subject from the standpoints of theory and practice and gives much information of value to users of the cutting flame.

CONCRETE WATERPROOFING—Stone & Tar Products Co., 97 South Sixth street, Brooklyn, N. Y., has issued a booklet covering its waterproofing materials for use with cement and other materials to increase wear and prevent water in filtration. Many uses of these materials are suggested.

ELECTRICAL EQUIPMENT—General Electric Co., Schenectady, N. Y., has issued current bulletins on: Fan-cooled induction motors; automatic starters; synchronous motors; limit switches.

SHIPPING CONTAINERS—Container Corp. of America and Mid-west Box Co., Chicago, has issued a bulletin on its waterproof solid fibre shipping containers. Tests of its strength and resistance to water are shown.

STEEL DRILL—Morse Twist Drill & Machine Co., New Bedford, Mass., announces in a bulletin that it has developed a drill for drilling high manganese steel. Performance of such a drill in railroad manganese steel is given.

RECORDING THERMOMETERS—Brown Instrument Co., Philadelphia, manufacturer of indicating and recording instruments, pyrometers and similar devices, is mailing a bulletin showing application of its recording thermometers and pressure gages in plants where constant temperature and pressure is required. Details of construction of these instruments are also shown.

AUTOMATIC CONTROL—Monitor Controller Co., Baltimore, has issued a bulletin covering its devices for automatic control of machine tools as a means for speeding up production. It is illustrated to show application to various tools.

WATER SPRAYS—Semet-Solvay Engineering Corp., New York, in a current bulletin, calls attention to advantages of its water spray in water gas superheaters.

ELECTRIC HOISTS—Chisholm-Moore Mfg. Co., Cleveland, has issued a catalog of electric hoists, one of a series on material handling equipment. The general subject of electric hoists is covered, with description of various types of hoists and their use and care. Tables of clearances and dimensions and other data are given.

ELECTRIC MOTORS—General Electric Co., Schenectady, N. Y., has issued a bulletin on a type of motor of its manufacture, for alternating current use, with adjustable speed and brush shifting. Details of construction and wiring are given and full data.

SUPERHEATERS—A booklet by the Superheater Co., New York, is devoted to superheaters for power plants. Service of the industrial department of the company is also analyzed and its benefits pointed out.

AUTOMATIC PUMPING—Automatic control of pumping installations is illustrated in a bulletin by the Electric Controller & Mfg. Co., Cleveland. With motor-driven pumps such control is always effective and operates without attention when need arises, even after intervals of idleness.

RECORDING INSTRUMENTS—Value of recording instruments to provide graphic proof of tests, which can be reviewed by a second person, is the theme of a bulletin by the Esterline-Angus Co., Indianapolis. Lessening the human factor and a continuous record of performance are further advantages claimed for this form of recorder.

AIR COMPRESSORS—The sixth edition of its book indicating uses of air compressors and tools is being issued by the Ingersoll-Rand Co., New York. This publication is in two colors, 140 pages and has been translated into several foreign languages. Its title is "100 and 1 Ways To Save Money." It is largely illustrated by halftones to indicate the wide variety of uses to which compressed air equipment can be applied.

BOILER DOOR LATCH—Bass Foundry & Machine Co., Fort Wayne, Ind., is circulating a bulletin on its automatic safety fire door latch for use on steam boilers; an access door for boiler settings. These pieces of equipment are approved by boiler inspection officials of states requiring their use.

Business News for the Marine Trade

District Dredging Co., Hyattsville, Md., has been incorporated to manufacture and deal in dredging equipment by Walter M. Bauman and Clarence W. Gosnell.

Fort Pierce Financing & Construction Co., Fort Pierce, Fla., will dredge a ship channel across Indian river, having received authority from the War department.

Bids have been taken by the department of mental hygiene, Albany, N. Y., for machinery for two double-ended steel diesel-electric ferryboats for Manhattan State hospital.

Work is nearing completion for the Todd Engineering, Dry Dock & Ship Repair Co., New Orleans, which is building a new dry dock and ship repair unit. It will be in operation in the near future.

Bids have been taken by the United States engineer office, Chattanooga, Tenn., for diesel engine units, complete with generators, exciters, propulsion controls, motors and switchboards, etc.

United Engineering & Drydock Co., San Francisco, has purchased the shipbuilding and repair plant of the Daniel J. Hanlon Co., Oakland, and will operate a new shipyard at that place. Extensions and improvements are planned, to include the installation of additional machinery.

Bethlehem Shipbuilding Corp. Ltd., Quincy, Mass., is making alterations to one of its shops in East Boston, Mass.

General purchasing officer, Panama Canal, Washington, will receive bids until Oct. 2 for 6-cylinder marine type gasoline engines, machine screws, malleable iron pipe fittings, etc.

Hallett Aero Motors Corp., Inglewood, Calif., organized recently to manufacture airplane engines, has been operating a foundry and machine shop for manufacture of air compressors and marine engines. Additional space will be provided to take care of the new line.

Henry J. Gielow Inc., Dime Bank building, Detroit, has been incorporated with 5000 shares no par value stock to design and build ships, sailing vessels, boats, submarines, etc., by Alfred G. Mueller, Robert O. Newell and Vera M. Presher.

Tacoma Dredging Co., Tacoma, Wash., has the contract for excavating 870,000 feet of material from the entrance to one of the docks at the Puget Sound navy yard.

Grafton Boat Works, Grafton, Ill., has been incorporated with $50,000 capital to manufacture and deal in boats, barges, scows, etc., by P. N. Thomas, Ed. C. Seik and E. R. Purdy.

The shipping board has sold the Palmetto line to private owners.